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THE GAS JOURNAL

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A Glance at the Contents—

Autumn Meeting of Midland Association.

The Autumn General Meeting of the Midland Association of Gas Engineers and Managers took place in the Grand Hotel, Birmingham, last Thursday—Mr. H. J. Woodfine, of Wellington, presiding. [p. 488.]

Wales and Monmouthshire Junior Association.

The opening meeting of the session was held on Oct. 24 at Tonypandy, where members were invited to inspect the water pumping station at Blaenclydach. At a subsequent meeting Mr. S. E. Brett (Rhondda) delivered his Presidential Address, in which he put forward some suggestions for combating competition. [p. 494.]

Institution of Chemical Engineers Examination.

As will be seen from our advertisement columns, application forms (returnable on Dec. 21, 1931) and particulars of the 1932 Associate-Membership Examination, together with the Memorandum on "The Training of a Chemical Engineer," may be obtained from the Hon. Registrar, Institution of Chemical Engineers, Abbey House, Westminster, London, S.W.1. [p. 501.]

Scottish Junior Gas Association (Western District).

The opening meeting of the Scottish Junior Gas Association (Western District) was held in the Royal Technical College, Glasgow, on Saturday, Oct. 10, Mr. RONALD KEILLOR (Greenock) presiding in the absence of Mr. D. Melvin, Uddingston, the Past-President. The new President, Mr. A. McDonald, B.Sc., of Motherwell, was introduced, and he delivered an interesting Presidential Address on the subject of evaluation of coal for carbonization purposes. [p. 492.]

An Outside View of the Gas Industry.

An interesting address was given by Major G. H. Kitson, President of the B.C.G.A., and Chairman of the Leeds Corporation Gas Department, to the West Riding Salesmen's Circle, at the outset of which he remarked that his comparatively short acquaintance with the Industry had created in him a high admiration for its enterprise and its personnel, and he wanted them to know—and particularly, perhaps, in the Leeds and Yorkshire area with which he was most closely in touch—that he was anxious to be of any help within his power. [p. 484.]

Gas and Coke in Canada.

A Canadian correspondent gives statistics in regard to the coke and gas industry of Canada, when the second highest record in its history was scored last year, showing an advance of 26 p.ct. for the five-year period then ended. [p. 478.]

Manufacture of Solid-Drawn Steel Tubes.

A lecture was given on Wednesday, Nov. 11, at the Institution of Mechanical Engineers (by permission of the Council), by Engineer Captain J. A. Richards, R.N., retired, the London Director of Messrs. Tubes, Ltd., to about 400 students and others connected with the Gas Industry in and around London, on the "Manufacture of Solid-Drawn Steel Tubes." [p. 491.]

Gas Companies' Protection Association.

The Annual General Meeting of the Gas Companies' Protection Association was held in the Caxton Hall, Westminster, on Nov. 13. Mr. R. W. Edwards (Chairman of Committee) occupied the chair and delivered an interesting and comprehensive address, in which he traced the activities of the Association in its work on behalf of the Gas Industry during the past year. [p. 481.]

Floodlighting by Gas at Barking.

On Oct. 5 Barking received its charter of incorporation from the hands of H.R.H. Prince George, and a week of celebrations followed the presentation of the charter, a feature of these being the floodlighting of buildings of historic and local interest by gas. Among the buildings illuminated were the Public Library in Ripple Road, the Lodge at the entrance to the Park, and Eastbury House, all of which are illustrated in photographs appearing to-day on p. 480.

New Vertical Retort Installation at Newcastle-under-Lyme.

The new continuous vertical retort installation at the Newcastle-under-Lyme Corporation Gas-Works was officially inaugurated on Nov. 6, the ceremony at the works being followed by a luncheon at the Municipal Hall. The new installation, erected by the Woodall-Duckham Company, is capable of producing 660,000 c.ft. a day on a ground space of 1890 sq. ft., and by the addition of four more retorts, 1,100,000 c.ft. can be easily produced on the same ground area. [p. 486.]

EDITORIAL NOTES

A Little Help—

THE country is, quite reasonably, impatient to see tangible results flow from the sweeping National Government victory at the polls. It is in no mood to countenance any unnecessary delay. In such circumstances as those by which we have been afflicted, a little talk goes a long way, and we have endured quite a lot. Since the election there has been but one question on people's lips—"What is going to be done about it all, and when?" Therefore it is we welcome the news that the Government are coming to grips with the problem of dumping—a problem the solution of which is long overdue.

The desire of the public for constructive action on the part of the new Government is accentuated by the financial demands that are now being made upon them. The year has been a bad one for the thrifty citizen. Not only are the requisitions of the tax collector extraordinarily heavy, but frequently the incomings have been disappointingly reduced. It has been rare for some time past to glance at any financial sheet without coming across some such announcement as "Owing to the prevailing uncertainty, the question of payment of a dividend will be postponed until the accounts are made up after the close of the financial year." In this way many anticipated interim dividends have not been forthcoming, just when they would have been most useful. From the purely financial point of view, the conservative policy thus adopted by Boards of Directors may have been quite defensible, but viewed in the light of shareholders' needs, there is a great deal to be said for the policy of a Company (bearing a name that is a household word) who have just raised their interim payment.

In announcing their decision, the Directors state they have been considering whether they cannot assist the shareholders in the difficult times through which they, in common with the large majority of people in this country, are passing, and are satisfied that the state of the Company's affairs justifies an increase in the amount usually distributed at this time of the year. "They feel sure that, at a moment when many companies are reducing their dividends and there is general financial stringency, the course they are taking will commend itself to the shareholders." Their example will commend itself to a far wider circle than their own shareholders.

Opportunity Brings Responsibility

THE position as we find it to-day was well put by Mr. R. W. Edwards in his topical address as Chairman of the Gas Companies' Protection Association, a full report of which will be found in this issue of the "JOURNAL." As he says, there have been returned to power "leaders who have already proved that they place Nation above Party. . . . Their opportunity is as great as their responsibility, and recent events have shown that Englishmen of every class—and whether unemployed or in work—will respond loyally to firm leadership, and are not afraid to face facts. . . . Industry as a whole is more than eager to respond, and given freedom, and some safeguards from unfair competition, it will do so."

With mention of the word "freedom," the thoughts of those connected with the Gas Industry naturally turn to that long sought New Legislation. Now that Mr. R. G. Clarry (one of the Association's Vice-Presidents) is once again in Parliament, he may be relied upon to keep this subject as far as possible in the forefront there. But there is, of course, even more pressing national work to be attended to immediately. Mr. Edwards pointed to the direct handicap of the present excessive burdens of rates and taxation, which, "by their resulting addition to charges, necessarily affect both the cost of living and also the production costs of our many industrial consumers." When a beginning has been made with the removal of this handicap, attention must be turned to other means of reducing production costs, which should bring into prominence the undue legislative restrictions from which the Gas Industry suffers. Mr. Edwards himself is a member of the Government Committee which is at present at work exploring proposed new gas legislation to give greater freedom of action and to enable gas undertakings to keep abreast of the modern tendency towards enlightened co-operation and organized efficiency, and which is also expected to facilitate the introduction of more rational rates of charge.

On Behalf of the Small Undertakings

IT is usual for the annual meetings of the Gas Companies' Protection Association to focus attention on matters of special interest to the smaller undertakings, as well as those concerning the larger ones, and last week's meeting proved no exception to this rule. In connection with the Finance Act, 1931, Mr. Edwards explained the unfortunate case of the 500 and more non-statutory companies who are at present supplying gas to the public of Great Britain. Whereas from the Acts providing for the de-rating of industrial properties the lands of all gas companies, whether or not working under statutory powers, were excluded, he showed that the Finance Act of 1931 expressly confines its exemption from land value tax to companies working under Private Acts and Orders, leaving non-statutory concerns without any similar protection. In taking up the cudgels on behalf of these smaller concerns, Mr. Edwards very rightly argued that "it is difficult to see any reason whatever why two companies working side by side and supplying neighbouring consumers should be differentiated in this way. The overhead costs of production of the one are to remain unaffected, while a new addition is to be made to those of the other."

The Chairman's recital of the steps taken—unfortunately without success—to get this hard position put right, affords ample proof of the substantial character of the work of protection which the Association undertakes. But there is much more evidence besides.

Virtues of Special Tariffs

IN the "JOURNAL" for Aug. 12 last we referred to the topical and spirited contribution, on the subject of hot water and tariffs, of Mr. H. C. Ridley, of Christchurch, at the meeting of the Gas Institute of New Zealand. We said at the time, "this is an important communication, and thoroughly vindicates the policy of special terms to those consumers who install gas storage water heaters." The normal rate for gas in Christchurch is 7s. 2d. per 1000 c.ft.; and the new tariff adopted was as follows: "Where a gas storage water heater is installed and consistently used for all household hot water requirements, the gas rate *for all purposes* shall be 3s. 7d. per 1000 c.ft. In addition, a monthly service charge of 5s. must be paid each and every month." In a very short time 220 consumers of gas installed storage water heaters, this being necessary under the new tariff. Of these, 122 had a monthly consumption of 958,200 c.ft. Forty-one of these were new consumers; the balance, 81, consumed

originally 273,600 c.ft., or an average of 3400 c.ft. per meter. After the water heaters were installed, the consumption rose to 714,300 c.ft., or an average per meter of 8800 c.ft. Mr. Ridley has forwarded to us further particulars relating to the success which has attended his enterprise. From a later list of 87 consumers who were already being supplied by gas and who installed a water heater under the new tariff scheme, we see that the average consumption per meter has increased from 2700 c.ft. to 7500 c.ft. per month. In addition, a large number of new consumers have been gained.

These statistics may in themselves make dull reading, but their meaning and implication are far from dull to members of the Gas Industry. The success of any undertaking must be gauged by three things—the intensity of the competition which it has to face, the growth in its sales, and the number of consumers on its books. Without knowing the latter figure, a percentage increase in gas sales is apt to be misleading, for it may actually represent a falling-away of business. What really counts is the consumption per meter; this is the only true criterion of sales success, for it has been made obvious enough lately that until a certain consumption has been exceeded the customer is a definite loss to the undertaking. We are all aiming—or should be aiming—at turning the unremunerative consumer into a paying proposition; and in face of keen electrical competition this is by no means easy. In our opinion the most effective weapon to use is some form of attractive tariff.

Mr. Ridley does not tell us the effect of his new tariff on the net profit of his Company, but otherwise he puts forward a most convincing case for his methods. Prior to the new tariff the undertaking's business was falling away at a disquieting rate. He is now gaining ground rapidly during a period of severe trade depression affecting nearly all incomes in his area of supply; and he is doing this in face of exceedingly severe competition from electricity. The electrical interests in New Zealand, as in this country, are fully alive to the desirability of levelling up the load, and are offering what Mr. Ridley calls "apparently ridiculous tariffs" for night baking and storage water heating. Even for ordinary domestic cooking, the price of the unit is, we learn, ¾d.—"slightly less than the overall costs"—so naturally anxious are the electricity interests to gain what until lately has been the Gas Industry's most favoured load. This is the sort of competition which Mr. Ridley has to encounter, and that he is meeting it so well shows that his ideas on tariffs cannot be lightly dismissed.

The Load Factor

Water heating by gas was discussed at a meeting of the Midland Association of Gas Engineers and Managers last week, the subject being introduced by Mr. J. H. Paterson, of Ludlow. It was generally agreed that the water heating load ought to receive the best treatment in the matter of charges, and that the advantages which the load offers fully justify intensive salesmanship on a more extensive scale than obtains to-day in general. Mr. Paterson regards it as being twice as valuable as the cooking load—first, because it is regular, and, secondly, because it involves an enormous increase in gas consumption. In the average six-roomed household of four persons, he remarks, having a modern gas cooker and gas storage water heater, 500 c.ft. of gas per week is used for cooking and 1000 c.ft. for water heating; and he points to the vast potential load awaiting all undertakings who render gas water heating as popular as gas cooking.

"Other advantages of the water heating load," he continues, "are that it helps not only to balance the summer output of gas with the winter, but to level up the night with the day load—an important factor in maintaining steady work for our carbonizing plants." While we fully appreciate that nothing whatever should be left undone to develop the water heating business, it is a little difficult to assess to what extent a load such as that presented by the storage water heater helps to level up the night with the day load, or to balance the summer output of gas with the winter. If we regard it as a constant load per twenty-four hours, then its effect must be to increase the day load and the night load to the same extent. The volume of gas consumed is greater, but the day and night ratio must remain, *on the peak load basis*, constant, though theoretically it may appear to alter. If we take a hypothetical case, where the peak of the day load is (say) 100 units, and there is no night load whatever, the ratio is infinity. If now we add another 100 units to the day load and another 100 units to the night load, the ratio becomes 2:1; but this is not a levelling-up. The difference between the peaks remains the same. In other words the water heating load is an additional load day and night. The great advantage is not that it levels up day and night use, but that it is a constant load which demands very little gasholder storage for an enormous increase in gas output. Hence such a load ought not to be charged with such heavy overheads as the cooking load, which demands a great deal of gasholder storage.

If we consider the storage water heater in actual use, is it correct to say that the gas consumption is constant over the twenty-four hours? With the thermostatic control, the gas consumption is at a maximum during the hours of greatest use of hot water, which is the daytime. Certainly in a household which prefers morning to evening baths, the gas consumption must be greater during the day than at night time; and the same applies where large quantities of hot water are drawn off during the day for washing-up and general household purposes. Finally, though more gas will be needed in the winter than in the summer to raise a definite volume of water to a certain temperature—say, 140° F.—and more hot water will be used because of the lower temperature of the cold water added, the percentage increase in gas required cannot be very great. The main consideration is that the use of gas-heated water is likely in summer to be as great as, if not greater than, in winter.

Co-Operation

Interesting points emerged in the discussion. There is no need to go over all the points here; they are set out in detail on a later page. Attention may, however, usefully be directed to one or two of them. In the first place, it will be noted that the feeling seemed to be that the block system is the better method of charging; but, as Mr. Paterson remarked, the question is whether, under this system, the price of gas can be got sufficiently low to secure the water heating load. The all-in charge per day is a way out of any difficulty.

That the British Commercial Gas Association might act as a bureau for collecting information on all such subjects as that which was under discussion was a suggestion put forward by Mr. Harold Davies, who saw in it much usefulness. A national bureau of the character he had in mind would seem to be closely allied to the suggestion regarding a national testing and research laboratory, which has been made on more than one occasion. A great deal of work of this kind is carried out now by larger undertakings, who are most generous in placing the results of their work at the disposal of the Industry, but obviously the smaller concerns are able to do but little themselves on these lines. If a scheme of this character was intended to become a national matter, the question of finance would be a not unimportant point requiring to be settled. But the idea of Mr. Davies was not meant to go so far as this, and if the Association act upon his hint, and make a representation to the B.C.G.A. that good results should accrue from the establishment of such a bureau as he indicated, more may be heard of the subject.

Another point upon which emphasis was laid was the need for co-operation all round. Co-operation with appliance manufacturers, and with surveyors, architects, auctioneers, land agents, builders, and plumbers. As was shown by the speakers, this already exists in great measure in some quarters; but there is room for more of it—and still more. Co-operation and goodwill must be the keynotes of Gas Service. There cannot be too much of either. We agree with Mr. Woodfine (the President) that the sellers of gas and the makers of appliances especially should lose no opportunity of getting together.

Here and There

In this country, the electrical industry is at the moment enjoying its customary boost in the daily newspaper Press, on the publication of the monthly production figures. Once again, " more electricity has been used; " the quantity showing a quite satisfactory increase when compared with the same month of last year. With gradually improving trade, no doubt we shall be favoured with further announcements to the same effect. But while affairs electrical proceed thus steadily on this side of the Channel, the Irish Electricity Supply Board are less happy in their circumstances. The Shannon Electricity Scheme was the subject of a note in these columns on Oct. 21, under the heading, " Hard Facts; " it being stated then that the Electricity Supply Board had been considering the question of increasing electricity supply rates over the Free State. This step was the result of " certain reports placed before the Board by their Auditors." So the Shannon Scheme, which was expected, upon its successful completion, to carry all before it, is subject to the same laws as are less ambitious projects.

It was anticipated that such price increase must prove tremendously unpopular all over the State; and realization has by no means belied this anticipation. When an intimation from the Electricity Supply Board that the charge for current would be increased by 25 p.ct. was communicated to the Co. Galway Board of Health, Commissioner Bartley announced that " if the Electricity Board failed to supply current at the former price of 6d. a unit, he would consider the advisability of getting private generating plants for the institutions under his administration." There have been many other protests. In fact, the feeling is such that consumers who had sufficient foresight to retain their gas fittings when yielding to the advances of the " younger sister " must now be congratulating themselves heartily.

The views of the Dundalk Urban District Council with regard to the cost of electricity—whether they refer to existing or increased rates, we do not know—are significant as indicating the turn that matters may be expected to take. This Council, who use electricity for street lighting, and whose station has been handed over to the Supply Board, have decided to accept the tender of the Dundalk Gas Company for public lighting, in preference to electricity, in a certain new building area. Both parties tendered for the lighting of ten lamps, and the Town Clerk said the net result of the tenders was that the acceptance of the Gas Company's offer (which included the erection of the lamps free of all cost) would save the Council £80 in the first year, and £4 10s. per annum afterwards. The Council unanimously accepted the tender of the Gas Company for five years, and permission was given to the Company " to install gas appliances in any of the Council's new houses where the tenants desired to have this form of lighting or heating."

As we remarked when referring to the matter on the previous occasion, " the Shannon Scheme conveys its lesson."

CORRESPONDENCE

Institution Autumn Research Meeting

Sir,—May I point out a small error in your excellent report of the discussion on the General Research Committee's Report? Having expressed the hope that a greater proportion of the expenditure on Research might be translated into definite pecuniary advantage to the Gas Industry, in my reply to Mr. Thomas Hardie's remarks I stated that, although I did not intend to convey that no pecuniary advantage had accrued from the Research work, it was a question of degree more than anything else. I did not use the word " greed."

Harold E. Copp,
Engineer and Manager.

The British Gas Light Company, Ltd.,
Hull,
Nov. 14, 1931.

Diploma in Gas Supply

Sir,—During the discussion following the report of the Education Committee at the Autumn Research Meeting of the Institution of Gas Engineers, Mr. Clark drew attention to the lack of candidates for the Diploma in Gas Supply.

Do not the present regulations of the Institution contribute largely to this state of affairs? They state in effect that Gas Engineering and Gas Supply are two different subjects, but each require an equal amount of technical knowledge. At least seven years of study are required to obtain the Diploma in Gas Engineering, and exactly the same time, involving an equal amount of work and expense, is required to obtain the Diploma in Gas Supply.

This would be equitable if the prospects in each case were equal, but the regulations of the Institution definitely give the Gas Supply Diplomé the lower status. He cannot hope to become a Chartered Gas Engineer, and must presumably occupy a subordinate position.

When, and if, it becomes possible for him to aspire to Corporate Membership of the Institution without more study than is required of the Gas Engineering Diplomé, then probably, but not till then, will candidates be forthcoming in adequate numbers.

" Interested."

Nov. 16, 1931.

Low-Temperature Carbonization

Sir,—In your issue of Nov. 4 there appears a letter from Mr. J. H. Brearley, asking that I should disclose certain particulars with regard to the working of businesses with which I am connected.

Mr. Brearley asks for information as to our contract prices for coal, the prices at which the products are sold, and a number of other particulars as to the working of our plants.

As I have not the pleasure of knowing Mr. Brearley, or what his interest is in these matters, I am at a loss to imagine why he should think he is entitled to ask for such obviously confidential information. I can imagine the sort of reply he would receive (if he received one at all) had he addressed such questions to leading firms in other industries.

While, therefore, I am under no obligation of any sort or kind to disclose to Mr. Brearley the private affairs of my Companies, I will, if he will call at my office, be pleased to give him the information he requires.

Further, I shall be pleased to show him over one or both of our Yorkshire Plants; and, as they are not very far from his address, I shall be disappointed if he does not accept my invitation.

W. A. Bristow,
Managing Director.

Low Temperature Carbonisation, Ltd.,
28, Grosvenor Place,
London, S.W. 1,
Nov. 10, 1931.

Sir,—In your issue of Oct. 21, Col. W. A. Bristow challenges and derides a number of statements made by Prof. H. T. Tizard in a paper which he delivered before the British Association on Sept. 28. I have read Prof. Tizard's paper; and experience as an investor in low-temperature carbonization has equipped me with some non-technical knowledge of that industry. Perhaps, therefore, you will permit me to comment in your columns on some of the points raised by Col. Bristow.

In the fourth and fifth paragraphs of his letter, Col. Bristow attempts to ridicule Prof. Tizard because the " vulgar commercial news " that imported motor spirit bears a duty of 8d. a gallon had apparently failed to " percolate into the august cloisters of the Imperial College." Disregarding Col. Bristow's rather florid use of words, may I suggest that he ought to have read further and more attentively?

In referring to " natural oil " which, Prof. Tizard said, must be virtually excluded if hydrogenation is to be established, he rightly understands—as Col. Bristow apparently does not—that the term includes oils other than motor spirit. The extract quoted by Col. Bristow is amplified by the succeeding context and, in particular, by two later sentences:

" Ultimately then, if not immediately, the competition of manufactured oil with natural oil must depend

on the cost of production of heavy oil, not of petrol. The exclusion, by taxation, of imports of heavy oil into this country would have even more serious consequences than the exclusion of petrol from natural sources."

Of the whole range of "natural oils," one alone—motor spirit—is taxed. Kerosene, gas oil, diesel oil, fuel oil, asphalte, lubricants, &c., are admitted free of duty into this country; and, in the aggregate, are sold in quantities greatly exceeding those of motor spirit. Evidently, therefore, we do not practise virtual exclusion of "the competition of natural oil;" and it would appear that it is Col. Bristow—not Prof. Tizard—who is "rather uncertain of his facts."

That uncertainty appears, from a later paragraph of Col. Bristow's letter, to intrude itself into the relatively simple process of paraphrasing the words of other people. The First Lord of the Admiralty, he says:

> "stated that Naval requirements for fuel oil were necessarily of a stringent character, but they had carried out a number of tests with low-temperature fuel oil, the results were satisfactory, and the Admiralty had determined to use a large quantity of low-temperature fuel oil in the future."

A meticulous scrutiny of Hansard of March 11, 1931, has failed to discover any statement which could bear the interpretation put forward by Col. Bristow. There was reference to the testing of *samples* of low-temperature oils—"Twelve of these samples were tested, and it is true to say that eight were satisfactory"—but the closest approximation to a determination "to use a large quantity of low-temperature fuel oil in the future" appears to lie in the words:

> "We have had submitted to us a considerable bulk purchase at a price not vastly in excess of that which we are paying at the present time, and the Admiralty is considering the question of purchasing this low-temperature carbonization oil. . . ."
>
> "If there is a firm who think they have a suitable kind of oil, we are prepared to test it, both in the laboratory and in trial runs, and to negotiate in regard to its purchase, provided always that such oil can be produced at an economic price."

In later paragraphs, Col. Bristow—who condemns Prof. Tizard's "sweeping statements without facts in support"—himself takes hold of a vigorous broom:

> "Several large commercial plants have been built and put into operation. Some of those plants have operated continuously . . . two plants at least have been producing to their maximum capacity. . . . The output of smokeless fuel has steadily increased . . . there are now well over 2000 distributors of low-temperature smokeless fuel . . . three works have a capacity for dealing with 266,000 tons of coal per year. . . . This distillery has worked continuously for over two years and has produced many millions of gallons of coal oil products."

If the low-temperature carbonization industry is so much alive, it would be interesting to have answers by Col. Bristow to these questions:

(*a*) What capital sum has been invested since 1926 in Great Britain in low-temperature carbonization enterprises?

(*b*) How much of that capital is virtually, or irrevocably, lost?

(*c*) What is the aggregate annual amount of dividends paid on the ordinary shares of low-temperature carbonization companies?

The replies, I think, would leave little doubt of moribundity—if not death. An *industry* cannot be said to thrive solely because it has attained some technical success. The touchstone lies in finance; and the financial condition of the low-temperature carbonization industry is pitiable and deplorable. (The 2s. shares, for instance, of Low Temperature Carbonization, Ltd.—of which Col. Bristow is Managing Director—are quoted in the official list as having changed hands on Nov. 9 at 2½d.) In fact, "as a self-contained commercial enterprise on the large scale, low-temperature carbonization must be regarded as dead."

H. T. KEMP.

1, *Linzee Road,*
Hornsey, N. 8,
Nov. 13, 1931.

Gas Publicity in Barbados

SIR,—My Company are making extraordinary efforts in this Island to keep gas to the forefront.

We are on the sea side, and our holder is practically the landmark used by most of the ships entering to enable them to pick up the correct anchorage. The words "USE GAS" face the entire harbour, and are visible from every boat calling at this Port. The letters are 7 ft. high and 15 in. thick. Our walls to the sea and to the road are whitewashed throughout, and we make extensive use of these. A delivery truck showing the slogan on either side is a further advertisement. Two notice boards are used wherever we have to open the road for any purpose. These have been in use for very many years past. We certainly feel it necessary to keep in "front of the public" all the time. Incidentally, we never let our advertisements or slogans get stale.

With regard to newspaper publicity, we have a small space in the centre of the front page of our local paper, which position I obtained as a perpetual contract at a nominal sum. The reading matter in this space is changed daily and embraces whatever may be the latest popular topic, news, or any other matter which may be of interest, always bringing in some reference to gas and its uses. This advertisement has been running daily for almost ten years, and at no time have we ever repeated the same advertisement. At times we make it amusing, instructive, &c.; so much so do we vary this and change the idea that hundreds of the public here openly state that one of the first things they look for each morning is "What do the Gas Company tell us to-day?"

For a small gas-works we are compelled to be up and doing, and to keeping gas and its bye-products before the public in every possible way. I venture to suggest there is not another works in the world under similar conditions where every possible loophole is searched for bye-products more than ours. Our tar dehydrating plant is a complete success; we also manufacture high-grade disinfectant similar to "Jeyes," "Dawn of Izal," and others of this class, a wood preservative, a special black tar paint, and also a flexible black tar paint (for tarpaulins, &c.).

A small quantity of crude oil is found in the Island, and we have installed a distilling plant capable of refining 1000 gallons in 24 hours from which we obtain petrol, paraffin, engine wash oil, and fuel oil. We have also a special distilling plant for aqua pura, and during our recent malarial epidemic we sold several hundred gallons "DISTAR," which was of material value to the public and incidentally this Company.

House lighting in the tropics, so far as this part of the world is concerned, holds no possibilities for us. Our high winds, with flying insects which are attracted by any form of light, and play havoc with fragile mantles, together with the heat thrown off by the burnt gases have long since convinced me that our future lies in gas for cooking and street lighting, and all our efforts are centred in this direction.

J. W. BROWN,
Engineer and General Manager.

Barbados Gas Company, Ltd.,
Oct. 24, 1931.

PERSONAL

Mr. J. H. JONES, Chairman of the Gloucester Gas Light Company's Profit Sharing and Saving Scheme, received a presentation last week from the members of the Scheme to mark the celebration of his golden wedding. The presentation was made by Mr. J. Morgan Matthews at the annual meeting of the members of the Scheme at the Works, Hempsted. He handed to Mr. Jones a solid silver salver suitably engraved, and a gold fountain pen for Mrs. Jones. A large number of the employees of the Company were present. Mr. Jones, in reply, said he felt deeply the spirit which had induced them to give the presents to himself and his wife. The presentation made him feel that possibly he had been of some service, but his fellow Directors were quite as much to be thanked as he.

Alderman J. H. LLOYD has been re-elected Chairman of the Birmingham Corporation Gas Committee. He has served on this Committee for 40 years.

Councillor F. J. COWIE has been elected Chairman, and Councillor WARD Deputy-Chairman, of the Bradford Corporation Gas Committee.

In a sketch of Mr. C. JAGO GREGG, Director and Manager in Glasgow of Falk, Stadelmann, & Co., Ltd., published in the "Glasgow Evening News," it is recorded that, in 1922, after a great fire which destroyed the Veritas building on Clydeside, he superintended the reconstruction so that the new quarters were better adapted than the old.

THE NEWS OF THE WEEK

A Dividend of 5 P.Ct. was declared at the annual meeting of the Torpoint Coal and Gas Company, Ltd., presided over by Mr. A. Granger, Chairman of Directors.

Koppers Coke Oven Company, Ltd.—The English shareholders of this Company have disposed of the whole of their holdings. The English Directors have retired from the Board.

The Belfast Gas Department has entered into a contract to supply the Down County Council with 1,400,000 gallons of road tar, and the Antrim County Council with 500,000 gallons of road tar, the tar to be delivered during 1932 for use on roads under the control of the local authorities named.

The Warrington Gas Department is now producing smokeless fuel on a large scale. It is prepared specially in nut size (2 in. by 1 in.) for domestic use, and is being sold at 9d. per half-cwt. delivered. Householders are being invited to call at the gas showrooms in Mersey Street for a sample bag, for which a charge of 3d. is made.

The Dewsbury Gas Committee have decided to have the town's name painted in big letters on top of one or more of the gasholders, both as a guide to aviators and as a little help towards Dewsbury's publicity as the centre of the heavy woollens industry. Dewsbury is on a main air route between Manchester air-port and aerodromes in Cheshire, and the Sherburn aerodrome in Yorkshire.

An Attractive Stand was obtained by the Leeds Gas Department at a Medical Exhibition held at Leeds Town Hall—the first such exhibition to be held in the city—from Nov. 10 to 13. Special features were made of the "Ascot" multipoint water heater, the "Lambert" water heater, the "Pearl" gas fire, and the Radiation clinical lamp, all of which were on exhibition and under periodical demonstration for the benefit of visiting doctors.

Comfort in the Pavilion.—"1001 Uses for Gas," on the equipment of the modern sports pavilion, published by the British Commercial Gas Association, of 28, Grosvenor Gardens, S.W. 1, describes the up-to-date water heating and other equipment in the sports pavilions of a number of well-known clubs, and contains an interesting series of photographs taken in the pavilions. It can be obtained free of charge on application to the Secretary of the Association.

Meter Testing in Edinburgh.—The number of gas meters tested and examined during the year May 16, 1930, to May 15, 1931, amounted to 58,038—434 wet meters and 57,604 dry meters; and fees to the amount of £3276 were earned. The total number of meters tested and examined by the Meter Testing Department since its institution in 1861, up to and including May 15, 1931, amounts to 3,984,549—the fees received for the same period being £137,245. There are now seven District Gas Meter Testing Stations under the jurisdiction of the Magistrates (the Local Authority for the administration of the Sale of Gas Acts). All these Stations are thoroughly equipped with the necessary apparatus to meet the requirements as prescribed by the Board of Trade.

Institution of Gas Engineers.

By courtesy of, and arrangement with, the President and Board of the Institute of Physics, members of the Institution of Gas Engineers have been invited to attend the Lecture on "Physics in Sound Recording" by Mr. A. Whitaker, M.A., F.Inst.P., at the Royal Institution, 21, Albemarle Street, W. 1, on Thursday, Nov. 26, at 5 p.m. The Chair will be taken by Dr. W. H. Eccles, F.R.S., F.Inst.P. Tickets for the meeting may be obtained from the Secretary of the Institution of Gas Engineers, 28, Grosvenor Gardens, London, S.W. 1.

Eltham Council Tenants and Gas.

Will the Ban be Removed?

Owing to the changed representation on the Woolwich Borough Council it is likely that the question of the supply of gas to the Council's housing estates will be again considered, states the "Kentish Mercury."

At a meeting of the Woolwich Borough Council last week the Housing Committee reported that, with regard to the new Middle Park Housing Estate, they were requesting the Electricity Committee to install an electric cooker in every house to be erected on the new estate, this cooker to be hired by the tenant from the Electricity Department at a weekly charge.

As the Council had decided that the houses should be electrically equipped and provided with a combination range downstairs and with a fireplace in one of the bedrooms, no gas would be allowed in the houses.

The Committee recommended that clauses be inserted in the tenancy agreements for the houses on this estate, providing that the tenants be required to hire from the Electricity Department the electric cooker installed and to pay the weekly charge therefor; and that gas be not allowed to be introduced into or used for any purpose in the houses.

Councillor Barefoot, the Chairman of the Committee, said he understood that it was the wish of the Council that this report and recommendation should be adjourned.

This suggestion was agreed to.

National Gas Council.

Meeting of Central Executive Board.

A Meeting of the Central Executive Board of the National Gas Council was held at 28, Grosvenor Gardens, S.W. 1, on Nov. 10—Sir DAVID MILNE-WATSON, D.L., LL.D., in the chair.

Development (Loan Guarantees and Grants) Act, 1929.—It was reported that the Council had made inquiries as to the exact position with regard to unemployment grants under the new Government, from which it appeared that the Unemployment Grants Committee, which dealt with applications by Local Authorities, had reduced the maximum amount of grants in revenue-producing schemes by about 7 p.ct. The Development Advisory Committee which dealt with applications by statutory companies, were also taking a much stricter view of applications for a grant than heretofore. The change of policy would not affect the payment of grants in respect of schemes already approved.

Mains and Cables in Highways: Conference at the Ministry of Health.—It was reported that a Conference convened by the Ministry of Transport had taken place on Nov. 13 at the Ministry of Health, at which were present representatives from the Ministry of Transport, the Ministry of Health, the Board of Trade, and the Post-Office, together with representatives from the various Associations representing the Highway Authorities, the Public Utility Undertakings, and the Surveyors.

The Conference had ultimately decided to recommend the appointment of a Departmental Committee to consider the questions before the meeting, the terms of reference to be drafted by the Ministries of Transport and Health and settled by a Sub-Committee of the Conference after receiving the observations of the bodies represented thereat.

Rating: Central Valuation Committee.—It was reported that, since the last meeting of the Board, the Rating Committee of the Council had held another meeting and considered certain amendments to the Recommendations made to the Minister of Health by the Central Valuation Committee with regard to undertakings extending into several rating areas. The Central Executive Board approved the recommendation of the Rating Committee that all undertakings, but particularly those owning "extensive hereditaments," should be urged to make representations to the Rating Authorities that effect should be given to the Recommendations contained in the 7th Series of Representations to the Minister of Health, particular importance

being attached to the appointment of one valuer to act on behalf of the various rating authorities in such cases.

Faraday Centenary.—A letter of thanks was read from the Federal Council for Chemistry for the support which had been given by the National Gas Council to the fund in connection with the Faraday Centenary Celebrations.

Coal-Fired Furnaces Supplanted by Gas.

The ever-extending use of gas for industrial operations hitherto considered outside the scope of gaseous firing, on account of cost, has been strikingly illustrated by a large contract for gas furnaces recently placed by Messrs. Woods Tileries (Hanley), Ltd., with the Davis Furnace Company, Luton.

Messrs. Woods Tileries, after the most careful and exhaustive investigations into the possibility of carrying out their work by gas, decided to scrap their existing battery of coal-fired furnaces and to install a battery of 10 gas-fired kilns, each having a heating chamber 11 ft. 6 in. back to front by 4 ft. 6 in. wide by 7 ft. 6 in. high, especially designed to accommodate their material.

The type of furnace adopted by the tile makers is the Davis "Revergen," which has already been installed in various tile and porcelain making firms in the Midlands, on account of its highly efficient method of regeneration, its exact control of atmospheric and temperature conditions in the heating chamber, its easy manipulation, solid construction, and other advantages.

The battery is to be replete with its blowing plant (electrically driven) and pyrometric equipment, and when completed will probably be the most extensive and complete installation of gas-fired furnaces for this work in the country.

The Stoke Gas Department is, of course, anticipating a welcome addition to its industrial load from this installation.

Recent Developments in Cooking Apparatus.

Gas Makes the Biggest Advance.

That considerable progress has been made in planning and equipment for kitchens both in this country and America was evinced in a paper read by Mr. Stanley J. Benham before the Institution of Heating and Ventilating Engineers at their sessional meeting at the Swedenborg Hall, London, Nov. 4, dealing with modern British and American practice.

He described the Hotel Stevens, in Chicago, as the largest hotel in the world, having 3000 bedrooms, the proprietor of which boasts that a visitor could come and occupy a different bedroom every night and it would take him about eight years to complete his round. Dealing with various buildings, Mr. Benham stated that so far as he had seen in America, all hotel kitchens are a combination of gas and steam. Coal cooking apparatus is falling out of use, and it is now only used for country places where gas and electricity are not available, and for central stoves in hotels and restaurants where French chefs are employed. On the other hand, there has been an undoubted advance in the use of oil fuel for cooking.

With regard to electric cooking apparatus, this was gradually increasing in popularity; but it had not so far made so great an advance as he expected, as the price of current was still too high in many districts. Gas is where the biggest advance has taken place. Gas cooking apparatus is a different thing altogether from what it was ten years ago, and almost all large kitchens are partly or wholly gas equipped. The average cost of the coal range in fuel, at a Torquay hotel was £36 10s. per quarter, while the average cost of the gas worked out at £37 18s. per quarter. On the other hand, they reckon that the saving in labour has considerably outbalanced this difference, and there are great advantages in the absence of dirt and saving in coal storage.

The main advancement in the last seven years has been in the finish of apparatus, this country having followed the lead of the United States and Germany. In America the great feature in most kitchens was the use of bright Monel metal for all sorts of purposes. In Germany he had been struck with the all-white enamelled gas apparatus and the bright solid nickel gas and steam boiling pans with white enamelled casings and nickel plated mountings. He was afraid that it was impossible in this country to produce white enamel on the lines they did in Austria and Germany. The solid nickel pans were very delightful, but extremely expensive. In this country they had mainly gone on lines of mottled grey enamel for all gas and electric cooking apparatus

THE NEWS—continued.

Portsmouth Girl's Success in "Fairy Gas" Competition.

No fewer than 19 prizes were secured by Portsmouth children competitors in this year's B.C.G.A. "Fairy Gas" Competition.

In connection with the competition there was an interesting little ceremony at the Portsmouth Gas Company's offices, Commercial Road, on Nov. 5, when the Chairman of the Company (Mr. T. H. F. Lapthorn, J.P.) made presentations to Portsmouth's chief prize-winner, Miss Eva Phyllis Irene Clark, a 15-year-old scholar of the Portsmouth High School for Girls.

Miss Clark was present with her parents, and Mr. Lapthorn was supported by Major W. Gillman, J.P., Dr. F. Beddow (Directors), Mr. T. Carmichael (Engineer and Manager), and other officials of the Company.

21,519 Competitors.

Mr. Lapthorn said that the competition was divided into three sections—senior, intermediate, and junior—and attracted 21,519 competitors from all parts of the country, and as far north even as the Orkneys. Portsmouth had been exceptionally fortunate in the results, for no fewer than 19 prizes had been awarded locally. Among them were two first prizes.

The first prize in the senior section, which was won by Miss Clark, was a cheque for £50 awarded by the British Commercial Gas Association, and the Portsmouth Gas Company had felt that they would like to add something to it. They had, therefore, contributed £25, making the prize £75, and this would be controlled by three Trustees, Sir Francis Goodenough, C.B.E., the Chairman of the Executive Committee of the Association, Miss Cossey, M.A., Head Mistress of the Girls' High School, and Mr. T. Carmichael, the Engineer and Manager of the Portsmouth Gas Company. The Trustees had full discretion to use the money after consultation with the girl upon her continued education after she left the High School. Meanwhile the money would be invested in 5 p.ct. War Loan.

Mr. Lapthorn handed to Miss Clark a copy of the trust deed. The Company also felt that they would like to give her something in a permanent form as a memento of the occasion, and Miss Clark was asked to accept a gold wrist watch, inscribed "Gas Scholarship, 1931. Presented to Miss Eva Clark by the Portsmouth Gas Company."

Afterwards Miss Clark and her parents and Miss Cossey were entertained at tea by the Company.

Forthcoming Engagements.

Nov. 19.—S.B.G.I.—Council Meeting and Autumn Meeting at the Hotel Metropole.

Nov. 19.—B.C.G.A.—District Conference at Swansea.

Nov. 20.—Institution of Gas Engineers.—Liquor Effluents and Ammonia Sub-Committee, 2.30 p.m., 28, Grosvenor Gardens, S.W. 1.

Nov. 20.—London and Southern District Junior Association.—Meeting in London.

Nov. 24.—Southern Association of Gas Engineers and Managers (Eastern District).—Meeting.

Nov. 25.—Southern Association of Gas Engineers and Managers.—General Meeting, Hotel Metropole, W.C., 2.30 p.m.

Dec. 2.—London and Southern District Junior Association.—Visit to Messrs. Fescol, Ltd., London, and lecture on "Fescolizing."

Dec. 5.—Scottish Junior Association (Eastern District).—Visit to Caldwell's Paper Mills, Inverkeithing. Address by Mr. G. H. Gemmell.

Dec. 7.—Institution of Gas Engineers.—Finance Sub-Committee, 2 p.m.; Finance Committee, 2.30 p.m.; Executive Committee, 3 p.m.

Dec. 8.—Institution of Gas Engineers.—Council Meeting, 10 a.m.; Education Executive Committee, 4 p.m.

Dec. 9.—Manchester and District Junior Association.—Visit to Lancashire Tar Distillers, Ltd., Cadishead Works, and Address by Member of Technical Staff.

Dec. 11.—London and Southern District Junior Association.—Meeting in London.

Dec. 12.—Yorkshire Junior Association.—Meeting at Bradford. Paper by Mr. J. H. Bingham on "Dry Gas Meter Design."

Nov. 21.—Wales and Monmouthshire Junior Association.—Meeting at Cardiff.

Nov. 21.—Yorkshire Junior Association.—Meeting at Elland. Paper by Mr. A. W. Elliott (Assistant Engineer) on "Continuous Carbonization in Vertical Retorts."

THE NEWS—*continued.*

The Chester United Gas Company.

The Company's steady dividend record is mentioned in an article on the Chester United Gas Company in the "Potential Investments" column of a recent issue of the "Financial Times."

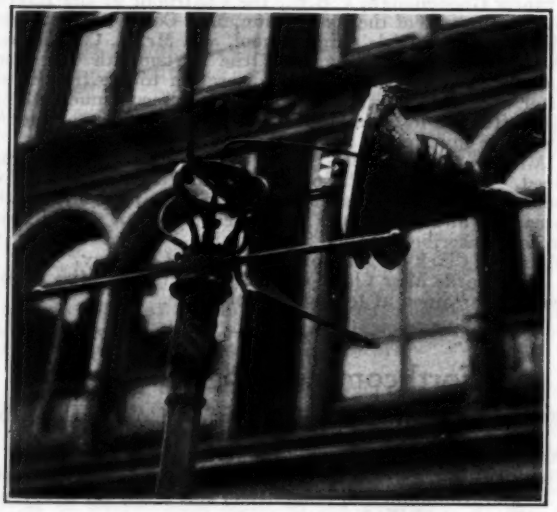
The Company, it was stated, was incorporated by Special Act in 1858, and its statutory area of supply covers about 36 square miles, including Chester, Hoole, Newton, Upton, Great Boughton, &c. The Company has maintained a steady progressive record and has paid ¾ p.ct. over and above the basic rate of 5 p.ct. on the ordinary stock since 1922, although gas prices have been reduced from time to time.

The dividend is subject to the usual sliding scale applicable to such undertakings. The basic price of gas is 10·4d. per therm in the inner area and 11·6d. in the outer area. The present price is 8d. in both areas. The price of gas was reduced by 1d. per therm to 9d. in March, 1927, and to 8d. a year later.

On account of the current year the usual interim dividend of 2½ p.ct. actual was paid on Aug. 15. The authorized capital is £267,482, and borrowing powers are half the paid-up capital, £74,430 having been exercised.

Pictorial Proof.

The accompanying illustration is from an untouched photograph of the results of an accident which occurred between two motor cars in a well-known street in London. One of the cars collided with a lamp standard which was



Strength in Times of Stress.

illuminated by four gas mantles. Although the lamp standard was very badly battered, yet the gas mantles remained intact—a testimony to the manufacturers. The mantles were manufactured by Lighting Trades, Ltd., and the Welsbach Light Company, Ltd.

A Talk on Gas at Rotary Club.

The Wolverhampton Gas Company are constructing at their works in Stafford Road a new spirally-guided gasholder having a capacity of 3 million c.ft. at a cost of about £40,000.

This fact was mentioned at Wolverhampton Rotary Club recently by Rotarian A. G. Williams (Secretary to the Wolverhampton Gas Company) in a talk on gas in the public service.

The holder, in a steel tank of reinforced concrete, is being built by Messrs. C. & W. Walker, of Donnington. It is the sixth holder at the works, and it will be three times as large as the largest of the other five. Commenced eight months ago, it is anticipated that the work will be completed next April.

Following a brief historical review of the Gas Industry, Rotarian Williams said the Wolverhampton Company was formed in 1820, and the first meeting of which there was any record was held at the Swan Hotel on July 1 of that year.

The first works were in Horseley Fields, but in 1848 a site on the Stafford Road was acquired and new works were built. These had been enlarged from time to time, until in 1897 the construction of a complete new section was begun on 9½ acres of land on the other side of the canal.

In the course of time the plant had been remodelled and brought very thoroughly up-to-date, and the works might now be taken as an example of modern gas-works practice. The total capacity of the plant was rather more than 8 million c.ft. per day.

He added that the Company carbonized some 56,000 tons of coal per annum. There were about 155 miles of mains, supplying some 36,000 consumers, and the Company's employees numbered about 430.

Steady Progress of Barnet Undertaking.

The Barnet District Gas and Water Company (stated the "Financial Times" in its "Potential Investments" column recently) was incorporated by a special Act in 1872 and further powers were obtained in 1883 and 1926 for supplying a district which includes several of the north-west London suburbs.

The statutory area for gas supply covers nearly 40 square miles. Thus the Company serves a large and expanding area in the north-west extra-metropolitan district in which very considerable development is taking place, bringing with it a corresponding demand for new services.

During the past six years the business of the undertaking has recorded uninterrupted growth, as shown by the following figures:

	1925.		1930.
Number of water supplies . .	22,070	..	29,421
Gas sold, c.ft.	306,666,800	..	384,470,800

The authorized maximum charged for gas is 12·5d. per therm, subject to revision, the recent selling price being 10·2d. per therm. Dividends are not subject to a sliding scale.

On account of the current year the usual interim dividend of 3½ p.ct. was paid on Sept. 1.

The authorized stock capital is £697,655, of which there has been issued £559,658, including £35,000 sold by tender in March last at a minimum price of £120. The unissued capital can be raised as ordinary (7 p.ct. maximum) stock or as redeemable or irredeemable preference stock (dividend not to exceed 6 p.ct.).

There is also outstanding £98,600 of 4 p.ct. perpetual consolidated stock and £162,500 of 5 p.ct. perpetual stock. Quoted at 126, the 7 p.ct. maximum stock gives a yield of 5½ p.ct.

Gas and Coke Interests in the Canadian Provinces during 1930.

A Canadian correspondent writes that the coke and gas industry of Canada scored the second highest record in its history last year, showing an advance of 26 p.ct. for the five-year period then ended. This industry covers the operations of coke and artificial gas plants.

Included in the industry were 41 establishments in 1930, of which 21 were in Ontario, 6 in British Columbia, 4 each in Quebec and Manitoba, 2 each in Nova Scotia and New Brunswick, and 1 each in Saskatchewan and Alberta. Of the 41 establishments 7 were bye-product plants, one a beehive oven plant, and 33 gas plants.

The value of the products of the industry in 1930 totalled £7,318,000. This was 8 p.ct. below the record year of 1929, when the value of similar products amounted to about £10,000,000. In 1925 the value of production in the industry was £5,780,000, so that the increase up to 1930 was over 26 p.ct. The capital invested in the industry in 1930 was £18,000,000 compared with £19,000,000 in 1929 and £14,000,000 in 1925.

Production Statistics.

The output of gas house, bye-product, and beehive coke in Canada during 1930 totalled 2,885,994 tons, compared with a total of 2,667,581 tons in 1929 and 2,314,127 tons in 1928. Bye-product coke plants, along with the one beehive oven plant, produced 2,062,764 tons in 1930, while only 328,230 tons were obtained from artificial gas plants. In addition to the above, 92,087 tons of petroleum coke were recovered as a bye-product of petroleum refining.

The production of artificial gas amounted to 35,927,532,000 c.ft., of which 10,177,933,000 c.ft. were produced in gas plants and 25,749,599,000 c.ft. in bye-product coke ovens. Sales of gas reached a new high level of 17,718,477,000 c.ft. valued at £2,700,000. Most of the remaining gas was used as a fuel in the producing plants, or in their associated

metallurgical works. In addition to the output just shown, 3,529,319,000 c.ft. of still gas were produced as a bye-product from petroleum refineries. Practically all this still gas was used for fuel purposes in the refineries.

Imports of gas or bye-product coke into Canada during the calendar year 1930 dropped to 1,061,040 tons from 1,226,953 tons in the previous year, while exports (exclusive of petroleum coke) for the same period advanced to 29,801 tons from 25,208 tons. In addition, there were imports amounting to 430 tons of ground coke for use in the manufacture of electric batteries. Exports of petroleum coke amounted to 24,178 tons.

Bath Gas Company's Development.

"Somerset's Cheap Gas Service" is an appropriate heading to an article dealing with the Bath Gas Company, appearing in the "Potential Investments" column of a recent edition of the "Financial Times."

The Bath Gas Company, it was stated, was established in 1818, incorporated by Special Act in 1856 as the Bath Gas Light and Coke Company, and the present name adopted in 1927. The statutory area of supply covers 62 square miles in Somerset, and at 5½d. per therm the price charged is about the lowest in the country.

In March, 1930, a special order was applied for and is still awaited to acquire the Chippenham Gas Company, dating from 1834, and the Corsham Gas Company, established in 1851. The purchase of both businesses will be effected by an allotment of ordinary and debenture stock of the Bath Company. These new acquisitions will give the concern an increased and growing hold in Wiltshire, especially as the Chippenham deal provides for a considerable extension of the existing area.

In March, 1927, the price of gas was reduced by 1d. per therm, and a year later by a further ½d. to the very low figure of 5½d., at which it still stands. The dividend requires £15,145.

The authorized capital is £445,000, of which there is £304,999 10s. issued in 5 p.c. (maximum) consolidated ordinary stock, including £82,000 added on conversion and £2042 premiums. At the current quotation of 92 the yield is 5⅜ p.c.

IN CONTINENTAL COUNTRIES - - -

Abstract Translations from the Technical Press of France and Germany.

THE ECONOMIC IMPORTANCE OF THE FINEST SIZES IN THE CLEANING OF SMALL COAL.

O. Schäfer in "Glückauf," 1931, 67, 1333-1339 (Oct. 24), discusses the question of the cleaning of small coal both from the point of view of yield and moisture content of the product. When the case is one of preparing a coal of ash content equal to 6·5 p.ct. for coke-manufacture, jig washers generally enable the desired results to be obtained. Newer processes though offering advantages in some respects may nevertheless have disadvantages which render their adoption unattractive. Experience has shown that the dewatering of the sizes larger than ⅛ in. presents no difficulties, hence if a new washing process only treats coal larger than $\frac{1}{100}$ in. or $\frac{1}{25}$ in. it can offer no advantages as regards the problem of the finest sizes. A new process can only achieve outstanding success if, without increasing the moisture content as compared with older methods, it nevertheless effects cleaning of the finest sizes below $\frac{1}{50}$ in.

The following table shows what can be achieved in the case of the various coal sizes by different processes:

Grade. Ins.	Lessing Process.	Flotation.	Jig Washers.	Dry Cleaning.
$\frac{1}{100}$—0 .	Untreatable	Almost complete cleaning	Untreatable	Untreatable
$\frac{1}{50}$—$\frac{1}{100}$	,,	,,	Incomplete cleaning	Very bad cleaning
$\frac{1}{25}$—$\frac{1}{50}$.	Complete cleaning	,,	Almost complete cleaning	Incomplete cleaning
$\frac{1}{12}$—$\frac{1}{25}$.	,,	Incomplete cleaning	,,	Almost complete cleaning
+$\frac{1}{12}$.	,,	Untreatable	,,	,,

The Lessing process is not a new one, since a similar one has long been employed by Siemens Brothers at Berlin for the washing of the anthracite used in the manufacture of electrodes.

With small coal, in all size grades, dry cleaning is less effective than is wet washing.

In order that maximum yields at the desired ash content may be obtained, it is necessary that the finest sizes should at least be partially cleaned. The problem at issue is to balance the yield and moisture content of the cleaned coal with a view to securing the best overall economic results. With the help of a series of washability curves and data showing the moisture content to which fine coal of various sizes will drain, the effect of different alternative methods of washing on the yield and moisture content of the washed coal of ash content 6·5 p.ct. is discussed. It is shown that processes which, by treating the dust, give an enhanced yield, give at the same time an increased moisture content in the product. The effect is all the greater as the amount and ash content of the fines increase. On the other hand, when the yield is lower, the yield of middlings is increased, and the ash content of the middlings is lower.

Where dedusting before washing is practised and the dust is added to the washed coal, any falling off in the efficiency of dust removal and consequent increase in the percentage of oversize carried over with the dust decreases the yield at the desired ash content and increases the moisture content of the product. Variations in the moisture content of the raw coal have a marked effect on the efficiency of dust removal.

The moisture and ash content of slurry may be lowered by the use of screens which yield a relatively clean oversize and a dirty fine product. The washed coal is advantageously screened over $\frac{1}{100}$ in., giving an oversize which is allowed to drain or is de-watered and slurry which is separated as indicated above.

For the manufacture of coking smalls of low moisture content, combined wet and dry processes may be used, and in view of the good draining obtained with the larger sizes, the dry cleaning is often confined to the ⅛ in.-$\frac{1}{50}$ in. fraction. If, however, the coal is divided into two portions one of which is washed completely and one only partially, the total yield at a given ash content is less than would be the case if all the coal were washed completely. Hence, only sufficient of the ⅛ in.-$\frac{1}{50}$ in. fraction of the coal should be dry cleaned to enable the desired moisture content to be realized. The remainder of this portion, together with the middlings from the dry cleaning plant and the coal above ⅛ in. is wet washed.

The following table shows the various possibilities in the case of a particular coal:

Washing Procedure.	Washed Coal.			Middlings.		Refuse.	
	Yield. P.Ct.	Ash. P.Ct.	Moisture. P.Ct.	Yield. P.Ct.	Ash. P.Ct.	Yield. P.Ct.	Ash. P.Ct.
(1) Dedusting at $\frac{1}{50}$ in., coal drained before returning the dust, slurry screened	82·3	6·5	10·4	10·9	38·4	6·8	71·9
(2) As (1), but dust cleaned by flotation	86·7	6·5	15·3	4·0	55·8	9·3	70·4
(3) Dedusting at $\frac{1}{50}$ in., washed coal drained, dust and slurry cleaned by flotation *and filtered*	87·3	6·5	12·8	2·0	60·5	10·7	70·2
(4) As (1), but dedusting at $\frac{1}{100}$ in.	84·1	6·5	11·9	9·1	44·3	6·8	71·9
(5) As (1), but less efficient dedusting	81·2	6·5	10·9	12·0	33·7	6·8	71·9
(6) Combined wet and dry process	80·7	6·5	8·3	11·5	28·4	7·8	73·5

The final moisture content may be reduced by the use of rapid dewatering devices or filters for the coarse slurry or flotation product, and if these are employed the differences in the moisture content of the products obtained by the various methods of washing are not so great.

An important desideratum is the avoidance of the production of more fines than can be helped both in the mining and handling of the coal.

FLOODLIGHTING BY GAS AT BARKING

A feature of the recent celebrations following the town obtaining its charter of incorporation, whereby it now becomes a municipal borough instead of an urban district

EASTBURY HOUSE—ILLUMINATED BY FIFTEEN GAS PROJECTORS.

On Oct. 5 Barking received its charter of incorporation from the hands of H.R.H. Prince George, and a week of celebrations followed the presentation of the charter, a feature of these being the floodlighting of buildings of historic and local interest by gas. Among the buildings illuminated were the Public Library in Ripple Road, the Lodge at the entrance to the Park, and Eastbury House, which the Gunpowder Plot was hatched. It was at that time the residence of Lord Monteagle, one of the conspirators. In planning the floodlighting, the aim was to show up the difference in texture between the trees in front and the building behind. Fifteen gas lamps were used, and those lighting the trees were placed almost immediately under the branches in order to provide maximum

The Park Lodge—Building, Trees, and Shrubs Illuminated by Five Gas Lamps.

The Public Library—Floodlighted by Sixteen Gas Projectors.

all of which are illustrated in the accompanying photographs.

The Public Library.

This building was illuminated by fourteen parabolic gas projectors arranged in two batteries—one on each extreme corner, so that the slight relief on the face of the building was accentuated. In addition, one lamp was placed behind each of the gate pillars to increase the illumination on the centre of the building.

Eastbury House.

This fine Elizabethan mansion is said to be the house in contrast. A too even illumination of the house was deliberately avoided, in order to accentuate its appearance of antiquity.

Park Lodge.

This charming little building was illuminated by three parabolic lamps placed in the garden near the fence. Two other lamps lit up the large tree at the side of the lodge and the geranium bed. Strip lantern projectors were also placed round the shrubbery on the right-hand side of the Park entrance. The projectors were identical in design with those used recently for the illumination of portions of St. James's Park.

Gas Companies' Protection Association

Thirty-Fourth Annual General Meeting

The Thirty-Fourth Annual General Meeting of the Gas Companies' Protection Association was held at the Caxton Hall, Westminster, on Friday, Nov. 13—Mr. R. W. EDWARDS (Chairman) presiding.

The ASSISTANT SECRETARY (Mr. R. G. Cooper) read the notice convening the meeting and the minutes of the last general meeting, which were confirmed.

In moving the adoption of the Report of the Committee, the CHAIRMAN said:

CHAIRMAN'S ADDRESS.

The past financial year of the Association, although one of more than usual activity, again shows a surplus on revenue account.

This amounts to £39 12s. 6d., as compared with £101 for the previous twelve months. You will note that the difference is largely accounted for by the increased expenditure which has had to be incurred.

In this connection I should like to stress the importance of not merely maintaining, but materially increasing our membership. The report gives some indication of the value to all gas companies of the work which we carry on, and every company undertaking—however small—will, by becoming a member of the Association, not only contribute its share to our modest expenditure for the common good, but also, which is more important, add weight and power to all our activities.

In the recent elections the overwhelming majorities which created so much impression, were made up of single votes of individuals; in the same way each company member of our Industry can best assist to tackle and overcome the problems of this difficult period, by uniting to give its individual support to the activities of our old established Association.

In this connection, I am asking all of you here to-day, and all members who read of this meeting, to use every opportunity to add to our strength by influencing those non-member companies with which they may come in contact, to join our ranks.

For the smaller undertakings especially, the subscription is a very nominal one, but their support and the personal co-operation of their representatives is of real value.

Reverting to our financial position, you will have noted that our assets now amount to £2656, the principal item of which is £2200 of 5 p.ct. War Stock, standing at cost, which is somewhat below the market value.

There is a bank balance of £510, including £250 on deposit, and since the date of the report a further sum of £150 has been transferred from current account to deposit account, making a total of £400 on deposit.

THE PAST YEAR.

The period since our last Annual Meeting has been an eventful one. Nationally, we have just experienced what I, for one, believe to be a turning point in the country's fortunes.

A year ago I referred in my address to the call of our national industries for means to escape disaster, and I added that, to my mind, that call "could not be answered fully by any government policy or action unless backed by the support and effort of every individual, every company and every industry in the country."

There has been a rude awakening since then, and at last such support is making its appearance. We have just returned to power leaders who have already proved that they place Nation above Party. Individually they are trusted, and collectively they have been given a power which amounts almost to parliamentary dictatorship. Their opportunity is as great as their responsibility, and recent events have shown that Englishmen of every class—and whether unemployed or in work—will respond loyally to firm leadership, and are not afraid to face facts or to swallow their medicine however unpalatable. The prescribing of that medicine must be entrusted to those who have been called in for that purpose, and it is for us to prove that the patient has still the vigour and determination to achieve, with proper guidance, an early and brief convalescence.

Industry as a whole is more than eager to respond, and I am confident that given freedom, and some safeguards from unfair competition, it will do so. Our own Industry is relatively sheltered, but is necessarily affected by the prosperity or otherwise of those which it supplies. Although only concerned indirectly with the "bogey" of dumping, we are directly handicapped by the present excessive burdens of rates and taxation, and these, by their resulting addition to charges, necessarily affect both the cost of living and also the production costs of our many industrial consumers.

The past year has, of course, seen abnormally depressed conditions in most markets of the world, but our own Industry has perhaps suffered in the disposal of its bye-products less severely than many.

Be this as it may, there is urgent need for improved price levels, sulphate of ammonia in particular having been most unprofitable. The national value of this product, as one of the few outstanding fertilizers of which we have ample home supplies, is apt to be overlooked. I feel, however, that we may expect a marked improvement in price levels, should import duties be improved. Not only would these be able to assist the home produced article directly, but indirectly also, they must greatly stimulate the demand if they succeed in helping British agriculture to recover from its present unhappy plight.

In the tar market extremely low prices are still quoted, although these are now slightly above the worst. Such hardening as there has been may be attributed to the much improved marketing arrangements for both creosote and pitch, more especially the latter.

Coke prices, allowing for normal seasonal movements, remain comparatively steady, although at low levels, owing chiefly to fierce competition from gas oven and furnace coke.

NEW GAS LEGISLATION.

Another handicap, to which I have referred in earlier years, is undue legislative restriction, and in this respect we have at last portents of better times. As you know, a Government Committee, of which I have the honour to be a member, is at present at work, exploring proposed new gas legislation to give greater freedom of action and to enable gas undertakings to keep abreast of the modern tendency towards enlightened co-operation and organized efficiency. It is also expected to facilitate the introduction of more rational rates of charge.

Recent political developments have unfortunately interfered with the work of this Committee, but its resumption is looked for in due course, and I trust that it may pave the way to the placing upon the Statute Book of a satisfactory measure.

It is obviously not possible for me to dwell upon the matters now under consideration, but you will, I know, share my satisfaction, that a start has been made towards fulfilling general and longstanding requirements.

FINANCE ACT, 1931.

Turning to the field of more general legislation, several recent Bills have called for action by the Association. That most contentious measure, the first Finance Act of this year, provoked much protest in connection with its Land Tax provisions. A point of practical importance to many member and non-member gas companies was taken up by the Association and received active support from the National Gas Council. You will recollect that in the Acts providing for the de-rating of industrial properties, the powers that be thought fit to exclude from their definition of industrial hereditaments the lands of public utility undertakings. This exclusion applied to all gas companies, whether or not working under statutory powers.

Our industry having been denied the benefit of these Acts, might logically expect that they should be wholly excluded also from the new Land Tax burdens, now to be imposed. The drafting of Clause 19, however, showed that gas undertakings were no longer to be treated as one body. The clause expressly confined its scope to companies working under private Acts and Orders, leaving non-statutory concerns without any similar protection.

Quite apart from the inconsistency of this new definition of public utility undertakings, it is difficult to see any reason whatever why two companies working side by side and supplying neighbouring consumers should be differentiated in this way. The overhead costs of production of the one are to remain unaffected, while a new addition is to be made to those of the other.

We have been told all too frequently that "God gave the land to the people," but for myself I find difficulty in seeing how that can be supposed to justify what is, in reality, an extra tax on that section of the people whose gas com-

pany does not happen to have gone to Parliament for special powers.

It is not generally known that there are in Great Britain upwards of 500 non-statutory companies supplying gas to the public; and the position appears the more unfair when we consider that the great majority of these are relatively small concerns which have had the enterprise to establish public supplies in places which can offer no promise of great development. It follows that with such companies the additional overhead costs which will result from paying Land Tax on their works sites—and perhaps also on their workmen's cottages—must have a relatively greater effect on their charges than in the case of a large undertaking.

Moreover, those concerns which have no statutory powers must necessarily be working in harmony with their Local Authorities, upon whose goodwill they have to depend in highway matters.

I cannot too strongly deprecate this tendency to coerce small undertakings into incurring expenditure which they can ill afford, in obtaining powers which they do not want.

The Association made representations in the first instance to the Chancellor of the Exchequer, hoping that when his attention had been called to the obvious unfairness of the Bill, he would sanction the required amendment. Unfortunately, that stern, and no doubt hard pressed, Minister replied with an uncompromising refusal. By that time the matter had become urgent, owing to the progress of the Bill, and Viscount Wolmer, the member for Aldershot, who had already been approached, undertook to do his utmost to press the matter in the House of Commons. Thanks to his efforts this amendment was not, like the majority of those put down, dropped for lack of time, and he spoke in its support with characteristic force and cogency. It is regrettable that the Government's use of the "guillotine" effectively prevented any proper discussion, the amendment being defeated by a vote on purely party lines.

I should like to express our appreciation of the keen and practical assistance so willingly given by Viscount Wolmer.

In case the measure might not be certified by the Speaker as a "Money Bill," the Association prepared to renew the attack in the Lords and obtained the promise of active support in that House. It is unfortunate that the Bill was so certified, and the anachronism to which we take exception has therefore become law. No doubt it is not the only part of that Act for which some of us here present have no great liking.

London Passenger Transport Bill.

Another Government measure of considerable importance is the London Passenger Transport Bill, and in this case the Association, and the National Gas Council (who took similar action) may congratulate themselves on obtaining a most satisfactory addition and amendment.

If and when the Bill becomes law, this will be of immediate value to the various undertakings within the widespread London Traffic Area, which includes portions of no less than seven counties. It will also have a wider significance in establishing, in an Act of major importance, a precedent which may be relied upon in support of similar protective clauses when required elsewhere. The tremendous strides made in the development of motor road services are very striking, and the passenger tram, like some elderly spinster, unable to keep abreast of the times, is falling more and more into disfavour.

The portion of the Bill with which we were chiefly concerned deals with the abandonment of tramway services and the removal from the highway of disused tracks.

The risks incidental to this operation obviously call for special care in connection with underground works; there is no doubt that the near future will bring increased and frequent need for protection.

Area Gas Supply.

A Private Act, the wording of which will be watched with the keenest interest, is that obtained a few months ago by the Sheffield Gas Company, that pioneer in the industrial exploitation of gas.

This infant measure can trace its parentage in part to the Area Gas Supply Committee, to whose activities I have referred on previous occasions; and, operating as they do in one of the most important of our manufacturing districts, one may be sure that our friends of Sheffield will contribute by the skilful use of their new powers to the trade revival, which already shows signs of birth in the North.

One cannot deny that the apparent wastage of resources in some coke oven centres urgently provokes a practical attempt to turn to account all unused gas, provided a remedy can be found which does not bring greater evils in its train.

Hire Purchase Bill.

A further Bill of practical importance to gas undertakings was that introduced by a private member to amend the law with regard to hire purchase. This, however, concerns us no longer, having died in infancy. In view of the great assistance which hire purchase has given to trade, one cannot regret that the proposed interference with the freedom of contract need not for the moment be anticipated.

The immense popularity of this form of sale and the way in which it has given the lie to the gloomy prophecies of disaster, so often uttered in earlier days, offer sufficient justifications for its continuance under existing conditions. It cannot be denied that some slight risks are occasionally involved both to the owner and to the hire-purchaser, but cases of real hardship have been found to be relatively very few indeed, and it is a well-known truism that hard cases make bad law.

Highways Conditions.

An interesting case which has been brought to the notice of your Committee was an attempt by a County Highway Authority to impose upon public utility undertakers new conditions as to underground works. Prompt advice in this connection has, I understand, prevented the acceptance of the proposed restriction of existing rights, and members will no doubt appreciate the value of making known matters such as these, so that they and others may be advised in time.

Subway Conference.

A tentative step towards general agreement on the vexed question of subways in relation to underground mains and drainage works, has just taken place in the formation under the auspices of the former Ministers of Transport and of Health of a conference of representatives of local authorities, public undertakers, and the Government Departments concerned. This conference is merely to enable representatives of the various interests to explore, unofficially and without prejudice, the need for, and possibilities of, more formal negotiations at a later date. Many of the questions put forward for consideration by such conference are largely technical, while others refer to matters in which there appears to be need to replace by concerted development on agreed plans the random lines which wholly independent work has sometimes followed. There is no doubt that improvement is possible also, in the present conditions under which Highway Authorities and public utility concerns exercise their respective rights, and it may be that the discussion now initiated will help to define the issues and to pave the way for future improvements. Its informal nature will no doubt prevent the possibilities of our present excellent relations with Highway Authorities as a whole being strained in any way.

The Association is represented at the Conference by Mr. A. Stokes, whose wide practical experience in the South Metropolitan Company's district should be of the greatest value.

Central Gas Advisory Board.

At our last general meeting, we had recently considered the report of the Government Committee on Gas Poisoning, and since then you will have heard that the Central Body recommended by that Committee has been set up and is already functioning.

When a fatality does in fact occur, it will be for the gas undertaking of the area concerned to co-operate with the Board of Trade by furnishing without delay as much as possible of the information which they require.

The Director of Gas Administration, at a recent Conference with the Central Body stated that although the majority of undertakings had been most helpful in this way, there were still a number of exceptions. I should emphasize that in our own interest it is desirable that the fullest information should always be given in order to counteract the undoubted past tendency for official figures to be misleading, when based solely on inquest records.

It has been said that it is not enough that justice should have been done; it must also appear to have been done. I should like to suggest that, in the same way, it is not enough that gas should have been made safe, if it does not also appear to have been made safe.

It comes to this, that if we do nothing to prevent the Board of Trade figures recording as fatal accidents the many cases of probable suicides who receive the benefit of the doubt, then we are as the lawyers say—estopped from complaining that the official figures give an untrue impression of the facts.

British Engineering Standards Association.

Other technical spheres in which the Association and its representatives have been at work include that of the British Engineering Standards Association, at which we were ably and actively represented by Mr. William Phillips. A Committee of this Body has set itself the task of ascertaining and summarizing the varied specifications now in use, with the object of obtaining ultimate standardization based on the data so obtained. One cannot but admire the courage of such an ambitious undertaking, but all manu-

facturers and other bodies and Associations concerned are presumably anxious to assist in every way a work which is so clearly to their mutual advantage. Here again, I see a movement which should prove a helpful factor in a national trade recovery.

Rating Valuation.

Matters of rating valuation are of direct and practical concern to every member, and here, again, we can regard recent movements with satisfaction. The Central Valuation Committee have now issued a new series of representations to the Ministry of Health, resolutions which deal with the valuation of undertakings on more enlightened lines. These representations have already been acted on by the rating authorities in one case within my own knowledge, and it is hoped that the experience of members will show that the adoption of more rational and efficient methods is becoming general. This will be of particular concern to the larger undertakings, which have suffered in the past from lack of unity between the different authorities whose areas they have served.

International Illumination Congress, 1931.

An event which has aroused some public interest during the last few months is the recent International Illumination Congress, the programme of which has included visits to such typical British towns as London, Glasgow, Edinburgh, Sheffield, Buxton, Birmingham, and Cambridge.

In view of the keen competition between gas and electricity, especially for public lighting purposes, the Industry may congratulate itself on the able personnel by which it was represented. This included the President and Messrs. C. F. Botley, D. H. Helps, and W. Phillips, to whom the hearty thanks of the Association are due for the time, trouble, and expense devoted by them as its representatives.

Conjoint Conference of Public Utility Associations.

A number of our activities during the past year have been carried out in conjunction with others as members of the Conjoint Conference of Public Utility Associations. This body has now outgrown its original temporary character, and has prepared a form of more permanent constitution under which to continue its activities.

It is satisfactory that our own and other public utility interests have appreciated the extent to which we have common ground, and the advantages offered by joint counsel and action. The Conference is of particular value in connection with parliamentary matters, as will be seen from the information given in the report.

As it grows in age and authority it should prove an exceptionally useful mouthpiece on many occasions, and can hardly fail to ensure mutual understanding and good-will between our own Industry and other servants of the public.

Representatives and Committee.

Before concluding, I should like to extend the thanks of the Association to all those members who have devoted their time and energy to acting as its representatives. We are exceptionally fortunate in having men of wide knowledge and experience willing and well qualified to represent us in connection with every aspect of the Gas Industry.

In particular I should like to mention the services rendered by the members of the Executive Committee, who have held themselves available at all times to deal with matters as they arise.

I will be speaking for all when I say with what regret we have received Mr. Townsend's decision not to offer himself for re-election, owing to the other demands upon his time. His retirement will be a personal loss to the Committee who have cause to value the services he has given. You will be asked to-day to fill the vacancy left by Mr. Townsend's retirement, and it is with great pleasure that I am able to put forward for election the name of Mr. Wilfrid Wastell, of the South Suburban Gas Company. I am certain that, if elected, Mr. Wastell will prove a valuable member of the Committee, and will be warmly welcomed by us all.

Before I lay down my work—which must be soon as time is passing—I hope to see the Association on a stronger and wider basis, going forward and gathering power as our own Industry has done and will continue to do.

Gas companies by their sound and progressive development have become known as the soundest of industrial investments. They have given to the public services unrivalled for reliability, efficiency, and convenience, and come what will they have a great future ahead.

May this Association in your hands, and in the hands of those that follow, uphold the traditions of its past and go forward to yet greater service.

Widening the Scope of the Association.

Mr. R. Bruce Anderson (Vice-Chairman), in seconding the report, emphasized the desirability of widening the scope of the Association in obtaining new members and of keeping in closer touch with their existing members, with whom at the moment they did not come much into contact unless they actually corresponded upon any matter.

Sir John Ferguson Bell extended his congratulations on their admirable report. Members obtained more value for money, he said, from this Association than any other. He thought it was necessary that there should be an independent association, such as their own, to deal with gas companies alone as distinct from municipal undertakings. He referred to the Chairman's remarks in regard to the stability of gas stocks. This was very true and a great testimony to those in control of gas companies. On the subject of gas poisoning, he said it was essential for a gas company to call in an independent doctor, and he recounted a case of his own experience in support of this. His own Company were always very careful to be represented at any gas poisoning inquiry. He went on to refer to the use of gas on municipal housing estates and to cases where the municipality, owning the electrical undertaking, not only insisted on electric lighting in their houses, but banned the use of gas for other purposes. The South Metropolitan Gas Company had done valuable work in this matter. They had in Derby some 5000 or 6000 such houses, and application had been received from some tenants to go back to gas, which the Corporation would not grant. This was very unfair, and when they had a larger number of cases they were going to take the matter up. In reference to the laying of mains, the Derby County Council expected the Gas Company to go to the expense of relaying the road foundations. He considered that if they put their raw material back, they should not be called upon to pay for new foundations for the road. In conclusion, Sir John said that he took a great interest in the work of the Association and would like to see all gas companies as members.

Mr. D. H. Helps (Reading) said that in his opinion the value of joining this Association was greater to small undertakings than to large ones, because most of the larger undertakings could afford to spend more on their staffs, while the small concerns could at any time obtain information from the Association on any point as well as the soundest advice. He went on to refer to tar for roads, remarking that there were some county councils and surveyors who used tar and bitumen, while some used only bitumen, and others only British tar. He emphasized the importance of the Association doing all in its power to persuade these people to use only British tar. He also supported what Sir John Ferguson Bell had said in regard to the stability of gas stocks.

A Call for Action.

Mr. C. F. Botley (Hastings) said that the Gas Industry to-day was face to face with many problems, and he was rather relieved to hear what the Chairman had said in regard to gas legislation, and he sincerely hoped that this was perfectly true. So far as he could see, however, the position was not nearly so satisfactory, and it seemed to him too bad that with a record like theirs in the Gas Industry, where they had shown that they could be trusted and the public had confidence in them, they should have to beg and pray for legislation in order to conduct their business in the way it should be conducted. They ought to insist upon it. They knew what they wanted in regard to gas legislation. Who was in a position to know what the Industry wanted if not themselves? As Mr. J. H. Thomas had said the previous day, this Government had been elected for business and not for talk, and he thought it was time that the Association did something in the matter, and members were relying upon them to do something. So far as he could visualize, particularly in regard to gas prices, if a company wanted to adopt any particular system, he thought they should be at liberty to do so. Some undertakings had already had the courage to take matters into their own hands, and they were not going to be stultified by inaction on the part of those who were too timid to support them. They should have power to adopt minimum charges and multi-part tariffs, and there was no better text-book on the subject than that of the Electricity Commissioners, and he referred to a recent leader on the subject in the "Journal," which, he said, represented the views of the Industry to-day. He hoped that before they met again this matter of legislation would be rectified in a manner which would give them the freedom they needed.

Mr. R. J. Auckland (Cardiff) remarked that they in Cardiff had also experienced trouble in regard to municipal housing, but the Corporation were now taking a fairer view of the matter.

The adoption of the report was then put to the meeting and carried unanimously.

Re-Election of Officers and Committee.

The Chairman then moved the re-election of the President of the Association. Dr. Charles Carpenter, C.B.E., which was seconded by Sir John Ferguson Bell, who remarked that Dr. Carpenter was an outstanding figure in

the Industry and was recognized as the leader of this Association. This was carried unanimously.

The Vice-Presidents, Mr. Reginald G. Clarry, M.P., and Mr. A. A. Johnston, were also unanimously re-elected on the proposition of Mr. BOTLEY, seconded by Mr. W. H. JOHNS (Swansea), after which the retiring members of the Committee were re-elected *en bloc*, with the exception of Mr. W. W. Townsend, who was not offering himself for re-election and in whose place Mr. Wilfrid Wastell (South Suburban Gas Company) was elected.

The Hon. Auditors (Messrs. W. A. Scott & Co.) were also re-elected and cordially thanked for their services, and the meeting closed with votes of thanks to the Secretary, Assistant Secretary, and Chairman.

AN OUTSIDE VIEW OF THE GAS INDUSTRY.

An address to the West Riding Circle by the President of the B.C.G.A.—Major G. H. Kitson, Chairman of the Leeds Corporation Gas Department.

Major Kitson said he felt a measure of embarrassment in speaking, as a newcomer to the Gas Industry, to a gathering of men who had spent the best part of a working life in it. He wanted at the outset, however, to say that his comparatively short acquaintance with the Industry had created in him a high admiration for its enterprise and its personnel, and he wanted them to know—and particularly, perhaps, in the Leeds and Yorkshire area with which he was most closely in touch—that he was anxious to be of any help within his power.

The Financial Position.

The title he had taken for his talk was perhaps not much more than an excuse on which to hang some general ideas, and by the time he had finished it might prove to have comparatively little relationship to what he had said. In view of his admitted lack of experience in the Gas Industry it was natural that his remarks should appertain very largely to the position in and around Leeds, but he believed that what he said of Leeds might very likely apply to many another undertaking. Rudyard Kipling had once written "What do they know of England who only England know?" The deep meaning of that phrase had impressed itself on him and caused him to feel that, in whatever one took up, one could not get a proper perspective of it by merely looking on and thinking, little of the point of view of those outside. This country had had an unhappy experience of the unwisdom of the narrow view recently when, after long years of complacence in the national financial position, it fell to the foreigner to tell us all of a sudden just what our pound sterling was worth—an enlightenment which came to us with rather a rude shock. The Gas Industry, like most others, had lately had to face very serious financial problems. They anticipated that before very long they would get out of these difficulties, but they would not do so without a good deal of hard work and effort. Perhaps the most difficult problem to deal with had been the fall in output, and a prospective fall that might be facing many of them in the coming year. Having this in mind, he had had a close look at their own Leeds gas undertaking as seen from outside of Leeds. Everywhere he went in the course of his inquiry he met with that characteristic goodwill and readiness to help which seemed to mark all ranks in the Industry, and this had, of course, been of great assistance to him in his inquiry and, he hoped, to the Leeds Gas Department. As a result of his inquiries he was amply satisfied, even after his comparatively short contact with the Leeds undertaking, that it was in perfectly good order. The financial position, therefore, was quite safe. So far as concerned the Staff, he believed they were determined not to be satisfied unless they were continually improving on results, and so long as the Staff were dissatisfied in that sense, he saw no reason why the Chairman should be other than satisfied. What was true of Leeds in this respect he felt sure was equally true of most other gas undertakings. There were, of course, many people ready to criticize what was being done by a public utility undertaking. He always invited such critics to have a look round the works and see for themselves, but unfortunately few of them bothered to take advantage of the opportunity offered. They were usually people who had no knowledge of the Industry and probably little knowledge of any kind of engineering and they ought to take any opportunity to learn a little of it before indulging in too much criticism.

The problem of coke oven gas was one which had been with them for some time, and it was an important study in itself. With the coal industry as it was at present he hardly felt that many gas undertakings were likely to move far in that direction, though the position might be more hopeful if and when that industry once more became its own master, and he would be surprised if some gas undertakings did not in the near future take advantage of some of the wonderful plants that were available, either on their own works or in conjunction with some neighbouring colliery. Residuals were another matter on which there was criticism by a good many ill-informed people, and it was difficult criticism to fight against having in mind how profitable residuals had been at one time and another.

The Salesmen's Task.

Turning from the manufacturing to the sales and commercial side, Major Kitson drew attention to the letter by Mr. W. Clark Jackson, Engineer and Manager of Neath Corporation Gas Department, appearing in the "Gas Journal" of Oct. 28, and read the following extract: "Even in the smaller works those of us who started out in life as being engineers first and foremost have, in the best interests of our undertakings, had to ease up on this side of the business for the purpose of concentrating more upon the commercial side; and I can fully understand that in the larger undertakings this is even more essential. When all is said and done, a gas undertaking can have the most modern equipment possible, with the best scientific control, but unless the management is such that the commercial side of the undertaking is equally well equipped for handling the sales of gas in all its multitudinous directions the undertaking will not be successful in the best sense of the word, and will therefore fail in its duty to the public as well as in its duty to the Gas Industry as a whole."

This declaration, said Major Kitson, struck just the note that he himself had sought for in his investigation of gas affairs. He would have thought it would be apparent in the mind of everybody in the Industry that they must all, more than ever, concentrate on the sales side. Indeed, every industry had to realize that as the years went by. The Gas Industry had realized it certainly as much as any and more than a good many, and it had not only realized it but had probably done more about it than most. Falling output was for the salesman more than anybody else to deal with. If it was established—as he thought it was—that the works side of the Industry was in reasonable order, then the salesmen had some hard work to do and an interesting problem to tackle. There were so many channels through which salesmen could deal with the matter. There were innovations in almost every form of appliance, and every locality had its own local difficulties and peculiarities to be studied.

In Leeds they were trying to meet the situation by a new scale of charges. Laymen would probably expect to see enormous results from this in the next twelve months, but one fancied they would be disappointed. They might perhaps look for results within two or three years. In Leeds they were also endeavouring to tackle very seriously the question of the central heating load, and had just arranged a specially favourable price which enabled them to present very real advantages to prospective buyers. Already they had booked considerable orders, including the heating of the extensive Municipal Buildings now in course of construction in Leeds. The layman, one supposed, imagined that the new building was going to be a network of gas fires all over the place, but of course there would be nothing of the sort. The Department had secured the order after the responsible Committee had had under close consideration the comparative costs and efficiencies of all possible

forms of central heating by gas, electricity, steam, coke, and oil.

This Lazy Age.

In regard to the selling of appliances, we seemed to have arrived at a somewhat lazy age. The public did not expect to have to go to any trouble at all to see something that anybody wanted to sell; nor did they intend to be at any trouble in finding out what was going on in the way of production of new or improved gas appliances. Gas appliances must be taken to the public. Everybody was getting into the lazy habit of expecting free service, and a good deal of it must be given in furthering the sales side of the gas business. There was, of course, no need to be discouraged by present difficulties. In Leeds they had been passing through harassing times, but they were able to report substantial increases of gas sales in recent months—something like £900 increase each in July and August, and £350 in September. At a little exhibition held recently, the sales were nearly double while it was in operation.

The Gas Industry was always moving ahead with the times. Even in this year of bad trade it had produced new types of water heaters with which in Leeds they were doing good business. There had also been all manner of new cookers, radiators in panel form, and fires, including the new Radiation " Cobble " " Beam " fire. Indeed, he could hardly think there was a more encouraging industry for the salesman, or a more hopeful outlook for an ambitious young man. Now that he had himself come into close contact with it, he found himself taking a much closer interest in everything relating to gas than he ever did before. He even found himself automatically looking out for defective street gas lamps. One of the things by which he was much impressed was the excellent method the Industry had of keeping in touch with its public through meter men, fitters, &c. He had made it his business to do some inquiring as to whether consumers were satisfied with the men who came to the houses, and the answer was generally on the right side, though of course there were some people who would always grumble.

Gas salesmen, he presumed, were well versed in the many publications produced in the Industry, and they could learn a great deal from them, including the ability to grasp quickly the type of person a prospective customer was—whether he or she needed talking to, or was one who liked to do most of the talking and be just gently guided in the right direction. Without skill in that particular direction no man could become a successful salesman, but it was an ability which could soon be cultivated with study and care. He could not help thinking it was desirable to have a system, however slight, whereby the salesman might be kept informed as to what was going on in the works. and particularly of developments there. It must be of value to the man " on the road " or in the showroom to know what was the general position at the works; and it must be equally valuable for the works to know the degree to which the sales of gas and appliances were being maintained or increased. They were two great and distinct departments, but they should not be treated as separate watertight compartments. Admittedly, the works could not be expected to keep the showroom supplied with a mass of daily technical data, but they could keep the sales staff posted in a general way as to changes and progress.

The Industry's Organizations.

Major Kitson said he had read with interest some correspondence in the " Gas Journal " lately about whether the four or five great organizations associated with the Industry ought to be more closely co-ordinated. Personally, he was strongly inclined to agree with the correspondents who suggested that the big organizations each had their distinct functions and would be well advised to keep to their own business and develop it. Some few months ago he had himself, at Watson House, expressed his appreciation of the manner in which the Industry was equipped with organizations to deal with the various phases of its problems, as compared with many industries in which one national organization had the unenviable task of attempting to deal with every kind of problem.

He would like to suggest, in conclusion, that it would be on the sales side that most of the activity of the Gas Industry would have to be concentrated in the next year or two—backed up, of course, by ever-increasing efficiency at the works. He was convinced this would be so, because of the financial difficulties through which all industry was passing to-day. It was up to salesmen to make themselves absolutely fit to meet this call. Meanwhile, he hoped the gas salesmen of the North, having at present a B.C.G.A. President in the North. would make use of him and what help he could give. He was there to be of use and was anxious to justify the great honour which had been paid him.

A Vote of Thanks.

Mr. H. E. Bloor, Engineer, Manager, and Secretary to the York Gas Company, proposing a vote of thanks to Major Kitson, said he did so with very great pleasure, although, to be quite frank, he thought one of the ordinary members of the Circle ought to have been asked to do this. The primary purpose of the Circles was to provide a platform for the youths or the mature men in the Industry to express their own thoughts and opinions, and the salesmen ought to be given the fullest possible opportunity to do their own talking instead of merely listening. They were certainly honoured that night in having an address by the President of the B.C.G.A. Major Kitson was youthful in his connection with the Gas Industry, but by the force of circumstances and his own merit he had been placed in a position of great responsibility after the quite short " apprenticeship " of a year as a gas undertaking Chairman. Mr. Shapley's professional friends knew that in Major Kitson he had a Chairman who would be a tower of strength behind him; one who, as an engineer himself, could understand things better than most laymen, and who could put a case forward with force in the City Council. Very important changes had been taking place in Leeds lately, including a reformed system of charges, which was likely to be watched with great success by the whole of the Gas Industry.

Mr. H. Wilde, Bradford (Hon. Secretary of the Circle), in seconding, said when the President was referring to falling output, it came into his (Mr. Wilde's) mind that a little inquiry would show a wide field for further development in lines already to some extent explored. Comparing the approximate total output of the undertakings in the Yorkshire area with the number of consumers, one found there was an output of something like 26,000 c.ft. per consumer, which worked out at approximately 72 c.ft. per consumer per day, or 3 c.ft. per hour. If every consumer were to burn only one small medium burner for 24 hours per day, the consumption would amount approximately to the same as the existing consumption. Again, though the area had nearly 842,000 gas consumers, there were, he understood, fewer than 300,000 gas cookers in use, which meant there was still a field for some 500,000 cookers open to their efforts. To get all consumers to use a gas cooker, even at a consumption of only about 20 c.ft. per day, would bring about an increase in consumption.

Major Kitson, responding, said he was thankful to feel that he had spoken for some 30 minutes without once making any kind of criticism of any rival industry. He felt strongly that what was said at the Exeter Conference of the B.C.G.A.—that one of the worst forms of salesmanship was to run down somebody else's commodity—was a message that might well be broadcast by the B.C.G.A. throughout all salesmen of the country.

Mr. D. Parson, Huddersfield (Chairman of the Circle), in calling upon Mr. C. S. Shapley, Leeds City Gas Engineer and General Manager, for a few remarks, said the salesmen knew they had a warm friend in Mr. Shapley, and they had been delighted that evening to realize how good a friend they had secured also in Major Kitson. [" Hear, hear."] That a great change for the better had come over the Industry was evidenced by the willing support now given to the salesmen and the salesmen's organization by the engineers and other leaders.

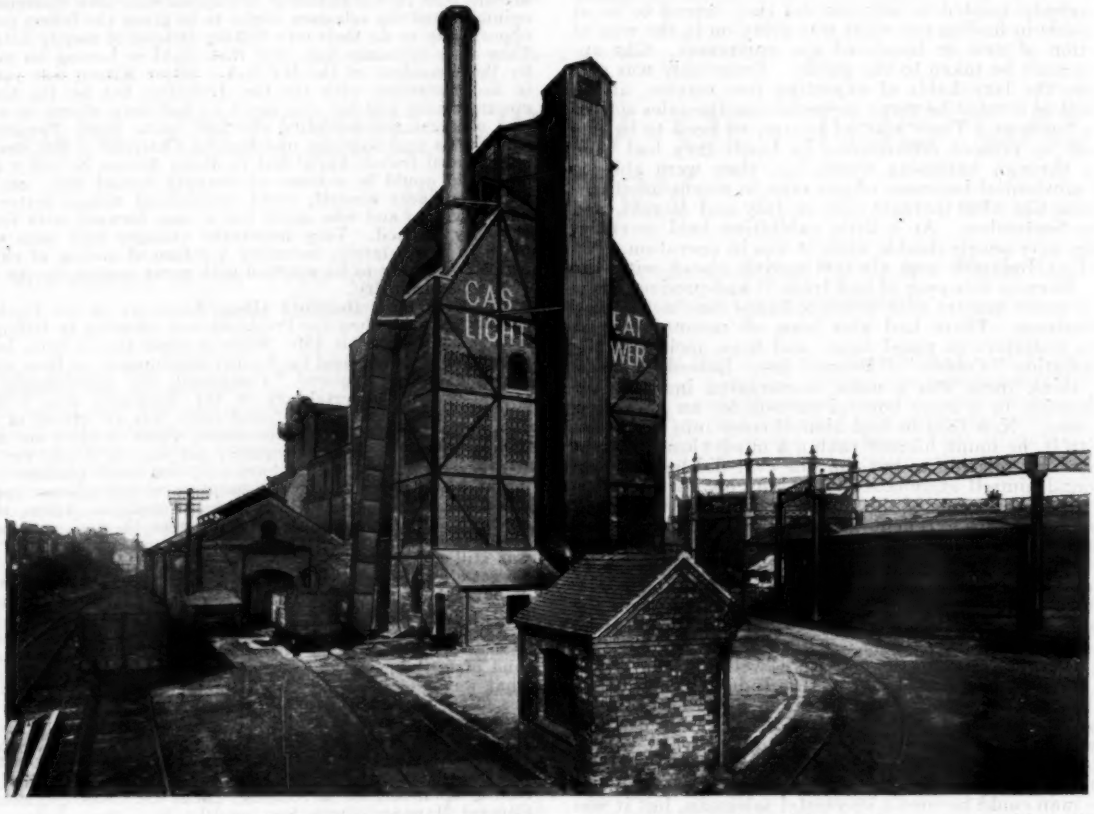
Mr. C. S. Shapley said he wanted to thank Mr. Kitson for kindly references to the Leeds Gas Department staff and to congratulate him heartily in his survey of the position in various phases of the Industry. The President had referred to decreases in sales, but these were probably not so serious as perhaps he thought. The majority of gas undertakings, those in industrial areas, were showing good increases having regard to all the circumstances. Even in Leeds the decrease, despite the stagnant condition of many trades, hardly amounted to 1 p.ct. He entirely agreed that it was not good policy to run down the goods of one's rival, but they must not shut their eyes to the very severe electrical competitor which they had to meet. There were many places which had not experienced this severity as had Leeds and Mr. Bloor at York, where the municipality owned the electricity undertaking and did everything possible to push it—especially on their own housing schemes—to the disadvantage of gas. In York there was a veiled electricity charge of something like 10d. a week in the rent of Corporation houses, and the people fondly believed they were getting their electricity at a halfpenny per unit. If gas slot meter consumers in Leeds would put a regular 10d. per week in the meter, irrespective of gas used, the Gas Department would be glad to supply them at about 1s. 6d. per thousand c.ft.

This was a time when everybody was crying Economy. The Leeds Gas Undertaking—and, no doubt, most others—had been pressed to economize, economize, and economize again, but he was really glad to know that his own Chairman (Major Kitson) had come definitely to the conclusion that economy could be carried too far. He believed his Chairman was almost convinced that if the Department was to progress it would probably have to extend, rather than curtail, its sales side. After all, one could not value the work of a good salesman exactly in terms of actual direct and immediate sales results, because it was a great factor in continuous spadework, which had its results in an indirect or direct manner subsequently, not traceable to any particular individual. Providing the engineers continued to produce a good reliable commodity, Mr. Shapley said he felt sure the salvation of the Industry lay very much in the hands of the salesmen.

Members of the Circle subsequently contributed to an interesting discussion.

New Retort Installation at : Newcastle-under-Lyme :

Woodall-Duckham Verticals Inaugurated



GENERAL VIEW OF NEW VERTICAL RETORT INSTALLATION.

A large gathering of members of the Newcastle-under-Lyme Town Council, representatives of neighbouring authorities, and prominent citizens attended the formal inspection and inauguration of the new installation of Woodall-Duckham continuous vertical retorts, at the Newcastle-under-Lyme Corporation Gas-Works on Friday, Nov. 6, the Mayor of Newcastle (the Right Hon. Col. J. C. Wedgwood, D.S.O., M.P.) was unable to attend the ceremony, though present at the luncheon, and the Chairman of the Newcastle Gas Committee, Mr. E. M. Hollins, was also unable to be present, owing to ill health.

The large party at the gas-works, led by Mr. F. L. Wimhurst, General Manager and Engineer, assembled round the hydraulically operated end discharge wagon tipper at the side of the new retort house. Here, at the invitation of the Deputy-Mayor of Newcastle (Ald. R. Beresford, J.P.), Sir Joseph Lamb, M.P. for the Stone Division, which includes a portion of the Borough of Newcastle, turned the wheel which operates the wagon discharge, and a load of coal was emptied from a railway wagon into the hopper below.

In the course of a brief speech, Sir Joseph said he regarded the installation as further evidence that Newcastle had a progressive Town Council, and he believed the town had not only a long history and high traditions, but a great future. That installation showed that the people of the town were determined always to keep up-to-date.

The Deputy-Mayor then turned another wheel which set in motion the bucket elevator, and the coal was passed to the top of the retort house for delivery.

The party proceeded to examine the interior of the retort house, Mr. Wimhurst explaining the various features of the equipment, and at the conclusion of this tour of inspection, an adjournment was made to the Municipal Hall for the luncheon.

The New Installation.

The new installation of six vertical retorts is capable of producing 660,000 c.ft. a day on a ground space of 1890 sq. ft., and by the addition of four more retorts 1,100,000 c.ft. can be easily produced on the same ground area.

The old installation of forty-eight inclined retorts occupied a ground space of 3510 sq. ft. and could produce 580,000 c.ft. per day; but in times of maximum demand they have made 680,000 c.ft., although not efficiently.

The auxiliary plant consists of the following:

Six annular condensers, with a capacity 750,000 c.ft. per day.

Tower scrubber (crude liquor), 6 ft. diameter by 26 ft. high.

One steam-driven exhauster, of capacity 50,000 c.ft. per hour.

One steam-driven exhauster, of capacity 25,000 c.ft. per hour.

Livesey washer, capable of passing 1 million c.ft. per day.

Tower scrubber (clean water), with a capacity of 750,000 c.ft. per day.

Four purifiers, 25 ft. by 25 ft., capable of dealing with 1 million c.ft. per day.

Station meter, of capacity 20,000 c.ft. per hour.

No. 1 gasholder, single lift, of 95,000 c.ft. capacity.

No. 2 gasholder, two lifts, of 325,000 c.ft. capacity.

One 16-in. station governor.

One 9-in. station governor.

The new installation consists of one bench containing six Woodall-Duckham continuous vertical retorts, heated by means of two producers placed at the ground floor level at one end of the bench. Provision is made for extension to 10 retorts at a future date.

Each retort is about 25 ft. high and of rectangular tapered shape, having a major axis of 62 in. and at the top a minor axis of 10 in., and is so designed as to allow continuous regular movement of the charge through the retort.

The design of the settings is in accordance with the latest practice of the Woodall-Duckham system.

Each retort is absolutely separate from the next. A straight joint is built between the retorts so that any expansion may be taken up, and provision is made so that any individual retort can be heated up or cooled down without in any way affecting the others. Each retort is provided with its own producer gas and secondary air

inlets and waste gas flue damper. It is thus a separate heating unit. By this arrangement maximum flexibility in output is obtained.

The retort faces and combustion chambers are constructed of the highest quality silica material for the full depth of the combustion chambers. This ensures low maintenance costs, coupled with high output per retort.

In order to provide means of varying the relation between the temperatures at the top and bottom of the retort, arrangements are made for the introduction of additional secondary air at a second point in the combustion chambers. Suitable damper control is provided. It is thus possible to vary the zoning of the heat according to the type of coal to be carbonized and the calorific value of the gas to be made.

Both the side walls and the top of the bench are efficiently insulated, with the double object of improving the working conditions and saving fuel.

Producers.

For heating the retorts, two producers, each large enough to serve five retorts, are provided at the retort house floor level at one end of the bench. They are arranged so that one producer may be shut down without in any way interfering with the other producer. The gas from either of the producers may be taken to the heating flues of any of the retorts.

The producers are of the step-grate type, and are constructed with ample grate area. This type of grate eliminates the need for clinkering. The only attention required to keep the producer fire in proper condition is a periodical pricking-up at intervals of four hours, or longer, dependent on the class of fuel used.

The waste-heat boiler is of the vertical natural draught type, designed for a working pressure of 100 lbs. per sq. in.

The Luncheon.

The Mayor of Newcastle-under-Lyme (Col. Josiah C. Wedgwood, D.S.O., M.P.) presided at the luncheon which followed the official inspection and inaugural ceremony, and among those who supported him were the Deputy-Mayor (Alderman R. Beresford), Sir Arthur Duckham, G.B.E., K.C.B., Sir Joseph Lamb, M.P., and Sir William Goodwin, together with the civic heads of a number of local authorities and many prominent figures in the Gas Industry.

Submitting the toast of "The Mayor and Corporation of the Ancient and Loyal Borough of Newcastle-under-Lyme," Sir Joseph Lamb spoke of the pleasure it gave him to learn that all the materials used in the construction of the new plant were entirely British. He congratulated the Manager of the gas-works on the able work that he had done in the borough and on his skill as Engineer.

Col. Wedgwood, in responding, said that they considered it a great honour to have as a guest that day Sir Arthur Duckham, who was not only famous in the Gas Industry but also one of the chief bulwarks of the Federation of British Industries. They had reason to be proud of the fact that their gas-works in Newcastle had been produced by British hands, which meant that they had been produced by the best hands in the world.

A toast to "The Contractors" was submitted by Alderman Beresford, who remarked that, as an engineer himself, he had a great admiration for men like Sir Arthur Duckham.

After referring to the wonderful personality of Sir Arthur, he went on to explain that the first patent taken out in connection with the Woodall-Duckham continuous retorts was taken out by Lt.-Col. H. N. Woodall and Sir Arthur Duckham in 1903. During the 28 years that had passed since then rapid progress had been made, a total of 230 installations had been provided, capable of carbonizing over 9,700,000 tons of coal per day. One hundred and forty-seven cities and towns in all parts of the world had adopted this system, and in many cases repeat orders had followed. The "W.-D." Company had built these plants in France, Germany, Norway, Denmark, Italy, Switzerland, the United States, Asia, Africa, and Australia. "Owing to the inventive genius and progressive efforts of such engineers as Sir Arthur and his Company," he proceeded, "small gas-works such as our own are able to give the public a cheap supply of gas—an advantage which at one time was only possessed by large works. We have in Newcastle a gas-works which, though small compared with some, is one of which we may justly feel proud."

Sir Arthur Duckham, responding, said that Newcastle now had one of the most up-to-date and most economical gas-works that he had seen—and he said that as one who had an intimate knowledge of gas-works in all parts of the world. The putting down of the new retorts was a heavy responsibility, and it was a heavy responsibility when their Engineer recommended that type of plant. The plant had already exceeded all their expectations. Mr. Wimhurst (the Engineer) was pleased; the members of the Council were pleased. His Company's actual supervision of the plant ceased that day, and the plant was now entirely in their hands; but Mr. Wimhurst knew that behind it he had the full service of the Company at his disposal should any difficulty ever arise, or should he be in need of advice at any time.

Alderman S. Myott submitted the toast of "The Visitors," and Mr. G. W. Hoon and Mr. R. G. Shadbolt responded.

A toast to Mr. Wimhurst was honoured on the proposal of Mr. Shadbolt.

New Members of the Institution

The following new members have been elected to Membership, Associate Membership, and Associateship of the Institution:

Membership.

Aird, Kenneth, Managing Director, Glover & Main, Ltd., 48, Grosvenor Gardens, London, S.W. 1.

Cutler, Samuel, Chairman and Managing Director, Samuel Cutler & Sons, Ltd., 39, Victoria Street, London, S.W. 1.

Glover, William Reid, Managing Director, Thomas Glover & Co., Ltd., 48, Grosvenor Gardens, London, S.W. 1.

Rodger, William Francis, General Manager, Edward Cockey & Sons, Ltd., Frome, Somerset.

Sayers, Ricardo John Henry, London Manager, West's Gas Improvement Company, Ltd., Regent House, Kingsway, London, W.C. 2.

Stewart, James Gibb, D.Sc., Proprietor of the Sigma Instrument Company, Letchworth, Herts.

Toogood, Herbert John, Director, Robert Dempster & Sons, Ltd., Elland, Yorkshire.

Young, Frederick, Engineer and Manager, Urban District Council Gas Department, Skegness.

Associate Membership.

Cotterill, John Clifford, *Institution Diplomé in Gas Engineering, 2nd Class*, 1931. Technical Assistant, Worcester New Gas Light Company.

Currie, William Allison, Technical Assistant, Corporation Gas Department, Glasgow.

Du Pontet, Godfrey Henry Stebbing, B.A., Engineering Assistant, Beckton Station of the Gas Light and Coke Company.

Gretton, Richard Adams, Engineer and Manager, Urban District Council Gas Department, Cowes, Isle of Wight.

Harris, Robert Wilfred, Assistant Engineer and Manager, Corporation Gas Department, Clitheroe.

Horrocks, Harold, Assistant Engineer and Manager, Corporation Gas-Works, Dunedin, New Zealand.

Harrison, William Bernard, Draughtsman and Technical Assistant, Corporation Gas Department, Colne, Lancashire.

Moys, Herbert William, B.Sc.(Eng.), Engineering Assistant, Bromley Station of the Gas Light and Coke Company.

Oldham, William, Assistant Engineer and Manager, Corporation Gas Department, Ilkeston.

Owen, John Richard, *Institution Diplomé in Gas Engineering, 2nd Class*, 1931. Works Officer, Richmond Station of the Gas Light and Coke Company.

Pollard, Jack, Assistant Works Manager, Oswald Street Station, Corporation Gas Department, Burnley.

Saunders, Alfred George, Technical Assistant, The Runcorn Gas Company.

Scott, Surtees, Technical Assistant, Newcastle and Gateshead Gas Company, Newcastle-upon-Tyne.

Simpson, John Knox, B.Sc. (Gas Eng.), Assistant Engineer, Shanghai Gas Company, Ltd., China.

Staniforth, Claude Bertram, Works Assistant, Gorleston and Southtown Gas Company, Great Yarmouth.

Underhill, Charles Hayward, Technical Assistant and Chief Chemist, Corporation Gas Department, Burton-upon-Trent.

Wakeford, John Ellis, Assistant Engineer and Manager, Corporation Gas Department, Brighouse.

Ward, George Arthur, Assistant Engineer and Manager, Corporation Gas Department, Ossett.

Associateship.

Browne, George Alfred, Chief Draughtsman, Southend-on-Sea and District Gas Company.

Crowther, Reginald William, Carbonizing Engineer, W. J. Jenkins & Co., Ltd., Retford.

Goodman, Ralph Morris, Director, W. J. Jenkins & Co., Ltd., Retford.

Teague, Harry Edward, Distribution Superintendent, City Gas Department, Johannesburg, South Africa.

THE "JOURNAL" TECHNICAL RECORD

Which contains Reports of Meetings of Gas and Allied Associations

Midland Association

THE WATER HEATING LOAD

The Autumn General Meeting of the Midland Association of Gas Engineers and Managers took place in the Grand Hotel, Birmingham, last Thursday—Mr. H. J. WOODFINE, of Wellington, presiding.

Following upon the confirmation of the minutes,

The PRESIDENT referred to the death of Mr. R. A. S. Browning, who had been a member of the Association for nearly seventeen years; and those present, as a mark of respect, stood silently in their places.

Mr. H. R. Wills, Manager, Gas-Works, Atherstone, was elected a member of the Association.

Certificates were then presented to the following nine successful students in the Higher Grade Examinations in Gas Engineering and Gas Supply:

Mr. J. C. Cotterill, Worcester	1st Class Gas Engineering
Mr. O. H. W. Boonham, Tamworth	2nd " " "
Mr. D. W. G. Scott, Birmingham	" " " "
Mr. F. W. Sidaway, Cradley Heath	" " " "
Mr. L. W. Manton, Birmingham	1st Class Gas Supply
Mr. R. Beech, Stoke-on-Trent	2nd " " "
Mr. F. J. Kimble, Birmingham	" " " "
Mr. H. I. Sandilands, Birmingham	" " " "
Mr. A. H. Tipton, Birmingham	" " " "

OFFICERS FOR THE ENSUING YEAR.

Office-bearers for the ensuing year were elected, as follows:

President.—Mr. E. B. Tomlinson, Birmingham.

Vice-President.—Mr. T. H. Poulson, Stafford.

Committee.—Messrs. C. F. Dakin, Cradley Heath; R. J. Meiklejohn, Rugby; Arthur Roberts, Hereford.

Auditors.—Messrs. J. H. Paterson, Ludlow; and C. R. Macfarlane, Tipton.

Hon. Secretary and Treasurer.—Mr. S. Sadler, Solihull.

The PRESIDENT said the members must be delighted to think that they would have as President next year the Chief Engineer of so important a gas undertaking as that of Birmingham. Mr. Tomlinson combined high technical ability with a charming personality. Mr. Poulson, of Stafford, who was to become Vice-President, was a very old friend, who was esteemed and admired all over the country. As to the Hon. Secretaryship, it was with great regret that the Committee learned that Mr. Roberts found it absolutely necessary, after three years' service, to give up the office. He was a long way from Birmingham, which made things awkward for him. In due course, no doubt, the Committee would mark their appreciation of his services. All would be glad to learn that Mr. S. Sadler, of Solihull, had consented to take on the duties. He was well known and enthusiastic, and he was more conveniently situated in the matter of locality.

WATER HEATING BY GAS.

A discussion opened by J. H. PATERSON, of Ludlow.

[SUMMARY.]

It is a remarkable fact that after having for years sadly neglected the whole subject of water heating by gas, our Industry suddenly became alive to its possibilities, and for the past eighteen months paper after paper has been read, and discussion after discussion provoked, before the various Associations and Gas Salesmen's Circles.

In view of all these I was for a while at a loss to decide from which perspective to treat the subject to-day. Many excellent papers have been presented setting forth the various types of gas water heaters and giving technical details of their construction and performance. Others have given particulars of schemes and tariffs evolved and used in particular towns. But much—very much—remains to be done as regards putting these schemes into practice and our setting forth in earnest really to capture the water heating load. I therefore propose to deal with this subject from a general rather than from a particular aspect, stressing the vital importance to the Gas Industry of the water heating load, dealing briefly with the appliances at our disposal, and lastly, but by no means least, with the importance of intelligent salesmanship, canvassing, and propaganda work.

WHY IS THE WATER HEATING LOAD SO IMPORTANT?

As an Industry we, for the first time for many years, in 1930 failed to show an increase in gas sales. I am well aware of the trade depression which prevailed and the consequent drop in the sales of gas for industrial purposes. Nevertheless many thousands of new houses were built, and *all* industries were not depressed; hence the position must be viewed with a certain amount of disquietude.

We hold a large proportion of the cooking load of the country and a reasonable (although there remains tremendous scope for expansion) proportion of the heating load. Regarding gas lighting, in spite of the improvement in appearance and efficiency of burners and shades and the development of switch control, the fact remains that much of our lighting load is gradually being filched from us. I say filched, because the electric supply companies get much of our lighting not from intrinsic merit, but through extravagant claims and through rates and tariffs which are sounder in appearance than in reality.

In face of all this the domestic water heating load presents a ripe and largely ungathered harvest. It is twice as valuable as the cooking load, of which we are so proud, accounting for approximately 33 p.ct. of the potential domestic load, as against 17 p.ct. for cooking. I have tested typical cases which bear out these figures. In fact, I have been struck with the consistency with which, in the average six-roomed household of four persons, and having a modern gas cooker and gas storage water heater, 500 c.ft. of gas per week has been used for cooking and 1000 c.ft. for water heating; and figures from other gas undertakings further confirm mine.

Suppose for a moment that the seven million people in the country who possess a gas cooker each installed a storage water heater, using at the rate of 50,000 c.ft. per annum. We have at once an increased output of gas of 350,000 million c.ft., or more than the present *total* output of the Gas Industry for *all* purposes in this country. But as admittedly many of the seven million are small consumers with modest incomes, suppose we halve the probable output. There still remains the vast potential load of 175,000 million c.ft. per annum. I suggest that few of us have any conception of the possibilities of the water heating business.

It is up to us to turn this dream into a reality. The higher the aim the higher the achievement. Other advantages of the water heating load are that it helps not only to balance the summer output of gas with the winter, but to level up the night with the day load—an important factor in maintaining steady work for our carbonizing plants.

STRENUOUS COMPETITION.

To gain this valuable load we have to overcome strenuous competition from our electrical friends. They are equally cognisant of its value, and equally determined to capture it. Both the efficiency of our appliances and the cost of our fuel load the dice in our favour, but only if we cast aside old shibboleths and prejudices. For instance, it is futile to think that each therm of gas sold for water heating must bear its full proportion of distribution costs and overhead charges. Rather should it be treated as excess consumption and charged for accordingly.

What is our electrical competitors' policy in this respect?

Interesting figures were given in the "Electrical Review" recently by Mr. P. J. Robinson, City Electrical Engineer of Liverpool, giving consumptions and costs for a year in an all-electric house, each appliance being separately metered. During the year 6140 units of electricity were used for water heating, costing £10. Part was supplied at ½d. per unit and the balance of about two-thirds at 0·3d. per unit, the average cost being 0·39d. per unit. What I want to stress is this—the working cost per unit at Liverpool is 0·63d., and to pay its way the electricity undertaking must obtain an average price of 1·1d. per unit; yet for water heating they are supplying current at about *one-third* that price. We must proceed on similar lines and either charge an extremely low price per therm or a low all-in price per day, or a combination of both.

The electrical industry is so impressed with the value of the water heating load that a special conference of electrical engineers was held early this year to discuss the whole question. Not only do they consider it a valuable source of revenue, but by means of a time switch storage heaters are brought into action during the night when the peak load is off, thus assisting both the peak and load factors.

Under these conditions electricity has been sold for ½d. per unit, and in one classic case at 0·15d. per unit, which are equal to gas at 5¾d. and 3·45d. (say, 3½d.) per therm respectively. Against such figures (although they are not general) gas at 9d. per therm is futile, but they emphasize the vital necessity for having special charges or tariffs for water heating, and it must be made as easy for the consumer to obtain ample capacity storage or instantaneous water heaters as it is for him to obtain cookers or fires. I look for the day when every gas undertaking will have water heating schemes identical with, or similar to, those so successfully employed at Halifax and York.

Appliances in Plenty.

While an "all-in" charge per day pre-supposes a low consumption type of heater such as the "Sunhot" boiler or "Immersion" type, more variety is possible where the gas is separately metered and charged for at special low rates. For instance, there are the "Equator" and "Ruud" boilers, which allow of smaller storage as a result of higher gas consumption and more rapid heating. Another very popular machine is Ewart's "Califont" or "Vivo" high-consumption instantaneous heater. It must not be forgotten that, whereas a consumer can choose either a gas or electrical storage heater, in the realm of instantaneous heaters gas stands supreme. These heaters have the advantage of a lower by-pass consumption, no storage of water against probable future requirements, but a continuous unlimited flow of hot water and at a temperature controlled at will by the user at the point of draw-off.

Only the exact amount of water required at any one time is heated, and without previous preparation and storage. Such heaters as the above will always have a vogue, particularly in new buildings, as they take up no floor space, and the cost of installation is usually less, no hot storage tank and return pipe being necessary.

There is one interesting point in favour of the "all-in" per day method of charging as compared with a charge for gas metered separately. In the former case the consumer gains by using the appliance to the utmost. In the latter case, where his gas is metered, there is every inducement to economize, with consequently reduced use of hot water and smaller gas consumption. The former scheme has a higher, more uniform load.

Another disadvantage of a charge based on metered gas is the provision of an extra meter. A small, cheap discount meter, not necessarily correct to 5 p.ct., and subsidiary to the main meter, would be a boon in such cases.

Salesmanship.

In spite of all that has been done in the provision of showrooms, &c., I maintain that in our salesmanship and propaganda work (especially local) we are either moribund or only nibbling at the business possibilities, and the need for live salesmen and salesmanship was never more pressing. We have had ever since the war successive Governments and Boards of Electrical Commissioners each more eager than the last to make the nation "electrically conscious." Every magazine and woman's journal one picks up is interspersed from cover to cover with electrical advertisements and inspired write-ups of the wonders of electrical appliances. What is even more disquieting is that they are increasingly getting the voice and ear of the architects and builders of the country.

Yet another factor—with the centralization of power stations for generating electricity, local power station engineers are free to devote more and more time to canvassing and propaganda. Most electrical undertakings employ permanent canvassers ever alert for business.

While local showrooms and local newspaper advertising with attractive blocks should be a *sine quâ non* with every undertaking of sufficient size, I firmly believe that intelligent salesmen-canvassers are our best means of maintaining and extending our business. The showroom should only be used as a base from which to work. We must get into the homes of our consumers and see what they are thinking about us. Not the crude type of canvassing of knocking at a door and offering to sell (say) a gas fire, but a twice or three times yearly call ostensibly for inspection of appliances, leading up to a talk about gas and the fire, or water heater, it is desired to sell. By this method and a preliminary circularizing with suitable lists we have in my town almost doubled our sales of appliances in the last two years.

The more responsible officials of an undertaking should get to know every architect and builder in their district. These are usually woefully ignorant of the latest developments in gas appliances; and if necessary a fire or water heating appliance should be fixed for them at cost, or even free of charge if necessary.

We have appliances far superior to those of our competitors; we have in gas a fuel sufficient for every need; yet, by sheer weight of numbers of salesmen and propaganda, we lose business which should be ours by every test of cost and efficiency.

In conclusion, lest I give any wrong impression, let me say I fully appreciate our progress as an Industry, but as an enthusiast in my profession it galls me to see the harvest unpicked because the reapers, in the shape of inspectors or salesmen, are too few or inadequately equipped.

Last summer I was fortunate enough to go to Norway, the land of mighty waterfalls and cheap electricity. Yet, steaming into the harbour of Trondjon—the former capital—we were greeted by two imposing gasholders and every evidence of a thriving gas undertaking; similarly at Bergen. In spite of electricity produced on the threshold by water power, and the Gas Company having to import all their coal, we witness a flourishing gas undertaking, and the street lighting is by gas.

What they can achieve under their conditions surely we can achieve tenfold under ours.

Discussion.

Shedding the Overheads.

The President remarked that the securing of the water heating load for gas was the most pressing question confronting the Gas Industry to-day. If there were difficulties in the way, they must be removed. If they did not get in very quickly and secure the load, they would have nobody to blame but themselves. It was, however, absolutely futile to think this load could be captured if it had to carry on its back the whole of the overhead charges. In his own area they had shed the bulk of the overheads, and were satisfied, for certain purposes, with the cost of the gas in the holder, *plus* their modest dividend requirements. They had to compete with a kitchen range, made in the Midlands, extensively advertised, and energetically put out, which it was claimed could be operated at a cost of 6d. per day. For this sum, the range would warm the kitchen, cook the food, and provide a copious supply of hot water for all needs. They had no reason to doubt the soundness of the claims made on behalf of that range. Now, he was in the position that, with gas at 2s. 3d., and taking the figures which Mr. Paterson had mentioned as the consumption in an ordinary four to six roomed house—1000 c.ft. per week for hot water, and 500 c.ft. for cooking—the cost came to 3s. 4½d., and he was left with the proposition of having to warm the place for seven days a week for 1½d. With regard to the discount meter, he thought this promised well for the water heating business; and if that proved to be the case, he would furnish information through the Technical Press.

The Value of Exhibitions.

Mr. P. N. Langford (Coventry) said that, while local newspaper and poster campaigns, and the issuing of pamphlets to consumers, were all useful, they should be supplemented on every possible occasion by demonstrations, particularly in connection with any trade exhibitions that might happen to be held in one's area. Vast numbers of people visited these exhibitions who, in the ordinary course of things, would not think of entering the gas showrooms. This applied, of course, particularly to prepayment consumers. At Coventry they had just concluded an exhibition where they made a speciality of "live" hot water equipment. Personal invitations were sent to every architect, builder, plumber, and hairdresser, and also to several thousands of the consumers in the better-class areas. The result had been most satisfactory, alike from the point of view of the business done, and of the interest created on the part of the public. Another thing which he thought was of vital importance was the establishment of contact, and even friendship, by responsible officials of the Department with local architects and builders. He had found this a very great help. As a result of this co-operation, they had at Coventry at least a dozen builders who now made a practice of fixing in houses gas hot water apparatus. Following negotiations with their Housing Director, arrangements had been made to fix a sink heater in certain houses before they were occupied. The apparatus would be fixed on a rental of 2s. 6d. per quarter. If the

tenant going into the house was not prepared to sign the agreement, they would leave the heater for a month or so, and then if the tenant wished to have it taken out the Gas Department would be prepared to do so. But the utility of this particular apparatus was such that he thought that the Department were running very little risk of having to remove it when once fixed. He had some doubt as to whether it was desirable to have a differential charge based on the purpose for which the gas was to be used. A reasonable charge for (say) the first two or three thousand feet consumed per quarter, and then a substantial reduction for all gas used above that figure, seemed to him possibly the better plan. ["Hear, hear."]

The PRESIDENT announced that Mr. Mackay, of Stoke-on-Trent, had originally intended to be present to join in the discussion, but the necessary alteration in the date of the meeting had unfortunately made this impossible. He had, however, sent his chief salesman, Mr. W. T. Purcell.

SALES POLICY AT STOKE-ON-TRENT.

Mr. A. MACKAY (Stoke-on-Trent), in the course of some notes prepared for the meeting, said that his was an industrial centre, the majority of the houses being of the working class type. This had an influence on their sales policy. Appreciable success had been attained with cooking, lighting, and heating; and the advent of new type water heaters afforded the opportunity of applying a vigorous sales policy to this branch of their business. After considering the advantages of the all-in system of charge, the hire of appliances, &c., it was eventually decided to make a bid for the hot water load on a system of flat rates, based on cash sale terms or hire purchase over periods of three or five years at the customer's option. The flat rate included the cost of the appliances, fixing, connecting to bath and basin, and providing hot water tap over the sink; the object of the flat rates being to quote at the time of inquiry exactly what the appliance would cost, including fixing. Ways and means were considered for introducing this scheme to the public, and it was decided to organize cookery lectures and exhibitions with hot water appliances as the dominant feature. Four halls in different parts of the city were selected for the purpose, the lectures were advertised in the Press, and 10,000 free tickets were distributed to selected residents. This created considerable interest, and to maintain this interest circular letters were sent to 12,000 tenants in the better class houses; this move being supported by further Press advertisements and special showroom displays. In this way they got their message to most of the consumers.

BATHLESS HOUSES.

When considering the field for hot water, it was realized that there were many houses in Stoke-on-Trent without bathrooms, and the attempt to obtain some of this potential business carried them a further stage—gas being, of course, particularly suitable for this purpose, as fixing entailed little disturbance. It was found that certain landlords were prepared to install a thermal heater and fix a bath in a spare room, making a slight increase in the rent to the tenants. This increase amounted to from 1s. to 1s. 6d. a week, which the tenants were very pleased to pay. The landlords were also glad to get a fair return on their money, and to have their property thus increased in value. In one street, orders were obtained for 19 installations under this system, and it was arranged to deliver at one time. This created interest—a photograph being featured by the local Press. At present he was preparing a special booklet for distribution to all landlords of the city through the Property Owners' Association. This field held considerable promise. There was, in fact, in connection with the water heating load, much business for those who went out to seek it—business which suited the Industry, and which would still further establish gas in the life of the community.

THE BLOCK SYSTEM THE FAIREST INDUCEMENT.

Mr. C. M. D. BELTON (Shrewsbury) remarked that, in the case of his Company, with a total of 9468 consumers, there were on the district 8929 cooking appliances, or, roughly, 94 p.ct. of the consumers. Coming to fires and radiators, there were 4026 out, or 42½ p.ct. of the consumers, which still left a considerable further field. But when hot water appliances were looked into, the percentage was very much lower. They had out 1332 wash boilers and 586 hot water apparatus, of which 370 were of the instantaneous type and 216 of the storage type. The total for hot water appliances came out at about 20 p.ct. In fact, if one excluded the wash boilers, there were only 6 p.ct. of the consumers using water heaters of any description. This showed what an enormous field there was before them. In their own way, they had done a good deal to push the hot water business, and it was not from any laxity on their part that the percentage of users was so small. In the matter of charging, he thought that, considering everything, the block system appealed to him as being both the simplest and the fairest way of offering inducement to consumers to increase their consumption.

On the subject of salesmanship he agreed with Mr. Paterson. They did need live salesmen. They had to educate them and to see that they were well equipped with all the necessary information to enable them to persuade people to use gas for all purposes. It was necessary to follow up all inquiries by sending out, not only literature, but a person who could talk intelligently on the whole subject. The proper equipment of salesmen was rendered easier now by the Education Scheme, and it was up to the Industry to seek among their own staffs the best people to put on to canvassing business. In Shrewsbury they kept closely in touch with the architects and builders, and also land agents, auctioneers, and house agents. As soon as a piece of land was sold, they were on the track; and directly a house was offered for sale or letting they were on the doorstep for business.

THE PART OF THE MANUFACTURERS.

Mr. F. DAVIES (Walsall) said that personally he thought the day of the geyser had gone. ["No."] The provision of an adequate supply of hot water was of the first importance. In some ways he thought the makers of appliances might do more to help them. At the last British Industries Fair, for instance, he had been much struck by the fact that, while on one stand every piece of apparatus was at work, on another none of it was in operation. Again, if they put themselves too much in the hands of the manufacturers, they were apt to learn a whole lot about the virtues of their apparatus, but perhaps they might not get to know where trouble was likely to occur.

As to the operation of hot water appliances, he suggested that, if it was going to serve a really useful purpose, the system must be capable of working in conjunction with the back boiler of the grate. For 19 months he had had an apparatus of this kind in his own house, and the cost had been very modest. The gas consumption worked out at 37,200 c.ft., or 1s. 9d. per week—their charge being 3s. 6d. per 1000 c.ft. He agreed that they should adhere to the block system. In his case they had a sliding scale which provided for a consumer paying a certain amount for the first 20,000 c.ft., and on all above this amount he got a very considerable reduction in price.

SMALL STORAGE HEATERS.

Mr. HUBERT POOLEY (Leicester) said that originally his undertaking could make no headway whatever in the matter of hot water supply, but with geysers in recent years they had gone along very rapidly. This, however, had not been the case with water storage systems. With the aid of the Housing Committee and the local builders they were now getting in wash boilers, which were used also in connection with baths. This had been a very fruitful source, but the most promising development they had had was within the last six months. This was in connection with the installation of small storage heaters over sinks. In the first three months they fixed no less than 1272 of these appliances. The capital outlay on each installation averaged £4 3s. 3d. This included both ordinary and prepayment installations. Ordinary installations were fixed free at a rental of 2s. per quarter. With prepayment installations they had two difficulties with which to contend—the method of charge and the fact that they were fitting an appliance which might be extinguished when the pennyworth of gas expired. To overcome the latter difficulty they provided an automatic controller which was the invention partly of himself and partly of one of his assistants, and was known as the "P.C." controller, supplied by John Wright & Co. The total number of orders received for these heaters ran into 100 per week, and amounted to considerably more than 2000 in less than six months. In no case had they given anything but satisfaction. The whole business had been most gratifying, and promised to be a very fruitful source of revenue.

GAS FOR CENTRAL HEATING.

Mr. T. H. POULSON (Stafford) remarked that he found the geyser trade was quite good with him. Big houses were no use for storage heaters. There were maids who required a fire in the kitchen, and this gave hot water. He thought, however, there was a big potential consumption in the upper artizan class, where the housewife did the work herself. For a "Lynton" boiler they charged 2s. per quarter, and fixed it free. They offered "Sunhots" on hire, 12 and 20 gallons, at 6s. per quarter, and "Equators" at 7s. 6d. As to cost of fixing, this had been particularly noted, and it had been found that the average cost in the case of a "Sunhot" was £4 10s., including water connection, and of a geyser £3. He himself had had a "Sunhot" for sixteen months, and found the consumption had been 62,000 c.ft. In order to get out more "Sunhots," they were considering an all-in charge of, roughly, 6d. per day. An excellent potential consumer was the gas-heated boiler for central heating. He had just fixed two, and looked forward to getting very good results. Where cost was not the sole consideration, they were, of course, ideal.

A BUREAU FOR COLLECTING INFORMATION.

Mr. HAROLD DAVIES (Chesterfield) suggested that the British Commercial Gas Association might act as a bureau for collecting information on all such subjects as that under consideration. A national bureau of information of that sort would be most valuable. Makers could send along all the particulars they had, and details with regard to costs and charges could also be got together. It would be possible, too, to get knowledge of snags to be looked out for. He thought the Association might make representations to the B.C.G.A. that good results should accrue from the establishment of such a bureau as he had indicated. In his town some years ago they introduced the block system of charge, and for large consumptions they got down to 4d. per therm, less 5 p.ct. They decided, however, they would give a flat rate for central water heating, and that was 4d. per therm. But for larger installations they got down to 1s. per 1000 c.ft., and they found that, when up against oil, this was the only price that was competitive.

SURVEYORS CO-OPERATE.

Mr. C. H. WEBB (Stourbridge) stated that, in the matter of the system of charging, he agreed entirely with Mr. Langford. As to getting into touch with architects and builders, he might say that Stourbridge being a Corporation undertaking, he had

an opportunity of seeing the list of plans that the Borough Surveyor's Department passed each month for building; but as this represented only half his area, he communicated with the other Surveyors outside the Borough asking them whether they would supply him with information when their plans were passed. The Surveyors had all agreed with this, realizing that it would be a general convenience, and so each month he got a list of properties about to be erected in their districts. This seemed to him to be the best way of getting the desired information.

GET THE COUNTRY TALKING.

The PRESIDENT referred to the fact that his own Company were doing good business at Wellington in connection with water heating. There were some nice large installations in colleges, preparatory schools, and similar places, on the domestic rate of 6d. per therm. In these situations the cleanliness of gas was a great point in its favour. He himself felt there was too big a gap between the sellers of gas and the manufacturers of appliances. It would be to their mutual benefit to get together much more closely. They wanted to get the country talking about gas for heating water, and the only way of accomplishing this was for every manager to arrange the best exhibition he could stage, in collaboration with the manufacturers. Several of the undertakings in his area collaborated with Radiation, Ltd., for the purpose of advertising gas for various uses. It was on a percentage basis, and was a very good plan indeed. His own view was that the same kind of co-operative plan might be extended to exhibitions—the cost being shared in satisfactory proportions. Notwithstanding all the efforts of the B.C.G.A. in the matter of the Education Scheme, it would be years before they had anything like enough educated salesmen to tackle the business in front of them. The makers, having experts who designed appliances, were as able to train men to canvass and sell these appliances as they themselves were, and in this matter they should work in conjunction with the manufacturers.

Mr. PATERSON said the general feeling seemed to be that the block system of charging was the better plan. The question was, however, whether, under the block system, they could get the price of gas sufficiently low for water heating. The all-in charge per day got over any difficulty.

On the proposition of Mr. H. DAVIES, seconded by Mr. TOMLINSON, Mr. Paterson was heartily thanked for having opened the discussion.

Institution of Gas Engineers.

Contribution to the Discussion on the 1st Report of the Street Lighting Committee.

Mr. T. H. PRATER (Isle of Thanet Gas Company) writes:

There are two points in this excellent report which might have received more emphasis.

Early in the report a reference is made to the adoption of modern lamps and burners, but no definite statement is made as to how twin burner lamps should be fitted relative to the line of the road, although attention is directed to the advantage of burners in alignment. Twin burners probably outnumber all other types of burners, and yet these appear to be erected without any definite relationship to the line of the road. If any system is followed, it is that the burners are placed in line with the road; a system which is contrary to the principles of modern street lighting.

If the lamp spacing is greater than twice the width of the road the burners should be across the line of the road in order to avoid interference between the mantles. As it is not usual to find closer spacing than this, it follows that burners should generally be placed at right-angles to the line of the road and not in the somewhat haphazard manner sometimes seen.

The advantages of such an arrangement are that the road as a whole gives the appearance of better illumination owing to the greater mantle surface observed; that the illumination at the B.E.S.A. test point is definitely increased; that if one of the two mantles fails, the remaining mantle gives light equally in both directions; and that if refractors are used for directional lighting the effect is more marked.

Further on in the report is the statement "The use of governors is advisable," an expression which I think should read "The use of governors is necessary." Public lighting burners are seldom adjusted during the time that they are actually giving service, and unless the pressure at the time of adjustment and service are the same, the best results cannot be secured.

Manufacture of Solid-Drawn Steel Tubes

A lecture was given on Wednesday, Nov. 11, at the Institution of Mechanical Engineers (by permission of the Council), by Engineer Captain J. A. Richards, R.N., retired, the London Director of Messrs. Tubes, Ltd., to about 400 students and others connected with the Gas Industry in and around London, on the "Manufacture of Solid-Drawn Steel Tubes." The greater number came from the Westminster Technical Institute, and were accompanied by Mr. E. L. Oughton and Mr. R. N. LeFevre, the chief lecturers to the Institute. There were also students from Acton and Chiswick Polytechnic, Gas Department (Mr. L. Poulter, chief lecturer), and East Ham and Battersea Technical Institutes. The audience also included Mr. J. Howard Goldsmith, President of the London and Southern District Junior Gas Association, Mr. Arthur Tennant, Senior Vice-President, and Mr. F. H. Higton, Secretary, and other members of the Association. There were also present some of the chief officials of the various London Gas Companies.

The lecturer traced the history of iron and steel tubes from the early days. In the first place, iron tubes were made by a crude process for the manufacture of barrels of fire arms. Gas lighting played a most important part in advancing the processes of tube manufacture, for in 1815 William Murdoch, the founder of gas lighting, put down an installation at the Soho Works, near Birmingham. He first employed old musket barrels screwed together for conveying gas through the works. At the close of the long European wars an abundance of such barrels were thrown on the market and were then the most economical and ready way of conveying gas.

The extension of gas lighting called for the production of tubes of greater length. In 1825, Cornelius Whitehouse, of Wednesbury, introduced the light draw bench worked by hand, so the process of butt-welded tubes came into existence.

Various inventions and introductions of new machines for which iron and steel tubes are ancillary were then touched upon. The steam tubular boiler for which stronger tubes were needed. Afterwards the bicycle, and the introduction of water tube boilers into the Navy for which solid-drawn steel tubes were necessary. In recent years the replacing to a very large extent of the welded tube for general engineering purposes by the solid drawn.

The processes of manufacture in piercing, hot rolling, cold drawing, &c., were then explained and illustrated by diagrams, and the advantages of solid-drawn steel tubes for gas mains over those made of other materials were pointed out. For instance, about a quarter the number of joints would be necessary in a steel main than would be required in a cast-iron main. Mains, therefore, could be laid in a much shorter time, and there would be far less risk of leakage through the joints. Steel mains are far lighter and can be more easily handled, so freight would be very much less in the export trade.

Steel mains are of a higher tensile, the ratio to cast iron being about 3 to 1. They possess greater elasticity. This is most important as road traffic to-day is so much heavier, and there is so much more vibration than formerly.

It is possible to protect completely the steel mains against corrosion by means of special preservative solution and impregnated hessian.

Samples were shown of various solid-drawn steel tubes made by Messrs. Tubes, Ltd., and their associated firm of the Bromford Tube Company, Ltd. At Bromford hot finish seamless steel tubes are manufactured up to about 16 in. in diameter. The samples included sections of gas mains showing various forms of spigot and faucet joints. Specimens of fluted solid-drawn steel lamp posts were also shown. It was mentioned that there had been serious, and in some cases fatal, accidents through cast-iron lamp posts being fractured by collision, whereas if these had been of steel there would have been no fracture.

Afterwards a number of slides were exhibited showing the processes of manufacture at the Bromford Tube Works, including the bar breakers, large piercing and rolling mills, straightening machines, testing plant, and laboratory. A film was also exhibited showing the complete operations on the manufacture of a 16-in. seamless gas main from the solid billet to the tube finished, coated with bitumen, and wrapped with impregnated hessian.

After the lecture a vote of thanks was proposed by Mr. Oughton, seconded by Mr. Goldsmith.

Scottish Junior Gas Association (Western District)

Opening Meeting of the Session

The opening meeting of the Scottish Junior Association (Western District) was held in the Royal Technical College, Glasgow, on Saturday, Oct. 10, Mr. RONALD KEILLOR (Greenock) presiding in the absence of Mr. D. Melvin, Uddingston, the Past-President.

Mr. KEILLOR, in his opening remarks, said that he was sorry that Mr. Melvin was not there to introduce Mr. McDonald, the new President. He was sure, however, that in Mr. McDonald they had one who would prove an excellent occupant of the Presidential Office. He went to Motherwell in 1924, and in seven years had become the Manager there.

The prizes for papers read during 1930 were then presented.

PRESIDENTIAL ADDRESS

of ALEXANDER McDONALD, B.Sc., A.I.C., A.R.T.C., of Motherwell.

[EXTRACT.]

Till the Gray-King assay plant had been in operation for some considerable time, the value of coal at Motherwell and Wishaw had always been gauged by the proximate analyses till it became evident that this might be very misleading. Mr. Wilson, in 1926, indicated that our results impressed on us the inadvisability of judging a coal from proximate analysis only.

The fact that the proximate analysis seemed to bear no direct relationship to the assay result brought one to consider if it were possible to correlate these two results, and the following considerations give an effort in this direction.

Knowing the composition of the gas and the volume obtained in the assay, the weight of the gas was calculated, and, as every other product was weighed directly, except ammonia, the loss was determined. These weights were as follows:

—	Actual in Gms. per 10 Gms.	P.Ct.
Gas	1·485 2500 c.c. of 552 B.Th.U. per c.ft.	14·85
Coke	5·889	58·89
Tar	0·906	9·06
Liquor	1·313	13·13
Loss	0·407	4·07
	10·000	100·00

If we assume that the "loss" is divided equally between the volatile matter and coke, we find that

	P.Ct.
The average total volatile by assay	= 38·95
,, ,, moisture by analysis	= 8·10
∴ ,, ,, organic volatile by assay	= 30·85
but ,, ,, gaseous volatile by assay	= 14·85

Hence, under the conditions of the assay, the "gaseous volatile matter" represents 48·31 p.ct. of the "organic volatile matter."

By calculation, therms/ton = organic volatile matter × 1·62.

Approaching 70 coals were examined in this way with the result to be expected—namely, that they did not agree closely with the assay results. It was noted, however, that coals with about 37 p.ct. "organic volatile matter" on the dry basis were most nearly agreeing.

Coals with a high percentage "organic volatile matter" on the dry basis gave a high result, while the low ones gave a calculated value considerably less than the actual.

Goutal in calculating the calorific value of a coal from the proximate analysis varied his factor dependent upon the volatile matter on the dry basis; acordingly, his figures were accepted in order to obtain another approximation.

When Goutal's factors were used a better result was obtained, but considerable discrepancies were still apparent. In general, it was found that for coals above 38·5 p.ct. volatile, on the dry ash free basis, an improvement was obtained. From this point to 30 p.ct. the calculated results were consistently high while below this they approximated more nearly the actual results.

Having determined this position, a new table was prepared, to replace Goutal's figures, by plotting a straight line graph from the approximately correct high volatile to the approximately correct low volatile.

The calculated results obtained by this means were in fair agreement with the actual tests. Out of close on 70 coals which had been examined, almost 50 were within a reasonable margin of the assay, while a number of those which did not agree could be accounted for as faulty tests. The mean deviation of all the tests carried out was only + 0·66 therms/ton and when one remembers the degree of experimental error to which the assay is liable, these calculated figures become almost as reliable as the actual assay. One would have liked to apply the test to a much wider variety of coals, but in the circumstances, this was impossible.

In a similar manner the coke yield may be calculated. It should be possible to obtain the yield of coke in cwt./ton simply by dividing the percentage of coke by 5; but from the assays carried out, it was seen that a more accurate result can be obtained by dividing by 5·3.

THE PRESIDENT,

A. McDONALD, B.Sc.

Mr. McDonald was educated at Allan Glen's School, Royal Technical College, and the University, Glasgow. He graduated Bachelor of Science (Applied) in 1923, and in the same year was made an Associate of the Royal Technical College. In 1924 he became an Associate of the Institute of Chemistry, and gained 1st Class Higher Gas Engineering and 1st Class Ordinary Gas Supply Certificates of the Institution of Gas Engineers. He was elected an Associate Member of the Institution in 1930. Mr. McDonald trained with Messrs. Caldwell & Co., Ltd., Engineers, Glasgow, and joined the Motherwell and Wishaw Corporation Gas Department in 1924. He was at the Wishaw works till the inauguration of the centralization scheme, and in 1930 was appointed Deputy Engineer and Manager to the Department. In July of this year he was appointed Engineer and Manager. For some six years he was Lecturer and Demonstrator in Chemistry and Metallurgy at Dalziel Technical School.

CONSTITUTION OF COAL.

In carrying out the tests, a number of observations were made and carefully recorded since it became apparent that different coals decomposed at different temperatures while some took longer to carbonize than others. Thus, to carbonize completely 10 gms. of coal, it required in a few cases

only 35 minutes, while several took as long as 50 minutes. The majority of the coals took from 40 to 50 minutes.

Similarly, the temperatures at which the different products of carbonization were liberated were carefully noted and the results are tabulated in Table I. as follows:

TABLE I.

Product.	Average Temperature.	Minimum Temperature Recorded.	Maximum Temperature Recorded.
	°C.	°C.	°C.
Aqueous distillate	428	370	480
Gas	461	430	520
Tar commenced	515	470	570
Tar ceased	647	590	700

This means that on carbonization, aqueous distillate appeared at about 400° C., while gas was not observed till a temperature of 450° C. and continued right through the experiment. Tar was first seen to be collecting at about 500° C. and was being continually evolved till a temperature of approximately 650° C. was reached.

The results led us to make one minute observation of the gas given off.

It became apparent that there were a number of decomposition points in the coal. These were three in number and occurred as indicated in Table II.

TABLE II.

—	Average.	Minimum Recorded.	Maximum Recorded.
	°C.	°C.	°C.
1st decomposition point	590	525	650
2nd ,, ,,	670	615	700
3rd ,, ,,	730	680	780

This would lead one to the conclusion that there are three definite compounds in coal with fairly definite decomposition points which compounds decompose as indicated above. One must not be too hasty, however, in making this conclusion, as the 2nd or 3rd might be compounds formed during the carbonization by gradual degradation. It was impossible under the conditions of this investigation definitely to establish this point.

From the results obtained there would seem to be three different types of compounds with different degrees of decomposition—namely,

	°C.
Gums at or about	590
Resins ,, ,,	670
And Humus ,,	730

We must, however, never lose sight of the fact that secondary decompositions may take place.

This, then, shows that coal is an agglomerate of four differing kinds of bodies with varying properties and at the same time in varying proportions, as is seen from the amount of gas given off. These are:

1. Carbon residium . . . . unaffected
2. Humus or cellulose bodies . decomposing about 730° C.
3. Resin bodies . . . . ,, ,, 670° ,,
4. Hydrocarbons or gums . . ,, ,, 590° ,,

The coals which generally produced the best coke gave off most of their gas between the temperatures of 590° C. and 670° C. In other words, the quantities of the constituents which decompose about 590° C. to 670° C. determine the quality of the coke—and it might be considered that the quantity of gas given off gives a measure of this.

With this end in view, the proportion of gas given off during the first two decompositions to the total evolved was calculated. It was found that where a coal gave over 50 p.ct. of its gas during this period, the coke was generally good, hard, and dull in character, while if 45-50 p.ct. was given off, it was frequently bright, porous, swollen, and friable, tending to be variable. If, however, less than 45 p.ct. was evolved, in these two flushes, a poor to non-coherent coke was obtained.

The results thus obtained may be summarized as follows:

(1) A first approximation to the thermal result as obtained, by the assay plant, can be obtained from the proximate analysis by using the formula

$$\text{Therms per ton} = 3{\cdot}6\,V - \frac{5{\cdot}5V^2}{V + C}$$

To obtain works' results this figure must be multiplied by a factor varying from unity to 1·4 depending on the type of plant and degree of steaming.

(2) The coke yield can be obtained in cwt./ton by dividing the percentage by 5·3.

(3) The critical temperatures are:

	°C.
Initial aqueous condensate	430
,, gaseous products	460
,, tarry matter	510
1st active decomposition	590
Final tarry matter	650
2nd active decomposition	670
3rd ,, ,,	730
Final temperature	900

(4) As indicated, the amount of gas liberated at the above temperatures is a measure of the bodies forming them and may even be utilized in some degree to indicate the quality of coke produced.

Discussion.

The CHAIRMAN said it seemed strange that after about 100 years of Gas Industry work, coal should still remain a mystery. It was a stupendous thought that coal should still defy all the brains of the Gas Industry and other scientists as well.

Mr. S. McGOWN (Glasgow) asked Mr. McDonald to give them some idea of the factors used in calculating calorific value.

Mr. R. FIFE (Kilmarnock) said it had occurred to him that the ultimate analysis might be applied in the same way as the proximate analysis to give results which could be usefully adopted as far as gas was concerned. Had the ultimate analysis been correlated with the thermal unit?

Mr. A. TRAN (Helensburgh) remarked that a point which Mr. McDonald had missed was visual examination. He had found it very beneficial to examine coal closely as it came into the works. He thought that the notes taken on the visual examination should be compared with the results of the proximate analysis, and in this way a very close idea as to the value of the coal could be obtained. They might think that a wagon of coal was a very dull object, but he could assure them that it could be very interesting when studied in the right way.

Mr. W. CAMPBELL (Falkirk) said a lot had been written about the constitution of coal. Probably the best of the investigations could be attributed to Burgess and Wheeler. Regarding the formula of Goutal, at Falkirk they had once tried to apply his results to some of their own, but found them to be no good. There were many factors to be considered in carbonizing coal in vertical retorts; would Mr. McDonald say if a vertical retort would not be better than the plant utilized? He thought Mr. McDonald brought out forcibly the urgent need in the Gas Industry for a standard test plant. At present they tested coal in almost every manner possible. Each works had its own method of testing, and there was no uniform test. Mr. McDonald had tried to show that with a uniform test plant they would get uniform results.

Mr. J. WEBSTER (Port Glasgow) made reference to the application of this method throughout the whole country doing away with the uncertain results obtained from different works, but pointed out that the question of price factor had a great bearing in valuing any coal and wondered how such a test could be translated to a financial basis.

Mr. W. DEARDEN (Johnstone) said that Mr. McDonald's paper should form a very valuable part of the Association's transactions, and if any of them desired to carry out some of the investigations on the lines suggested in the paper, the tables would form a very useful basis.

THE AUTHOR'S REPLY.

Mr. MCDONALD, replying to the discussion, said that by means of the plant referred to in his paper it was possible to place the coals into their relative values. If, however, they adopted this as a standard testing plant, it was not every works which would be in a position to utilize it. To carry out a test required half a day, and this in some instances would be thought to take up too much time. Regarding Mr. McGown's question concerning the factors used in calculating the calorific value of the gas, Mr. McDonald said they used the same factors as in normal analysis—viz., unsaturated hydrocarbons 2660 B.Th.U., carbon monoxide 325 B.Th.U., methane 1024 B.Th.U., and hydrogen 342 B.Th.U. Replying to Mr. Fife's question, if the ultimate analysis had been correlated with the thermal unit, he said that as far as he knew there had been no formula evolved for the ultimate analysis. It certainly opened up a line of thought which was worth exploring. He had started out on the idea of working on the calorific value of the coal, but had encountered a great deal of difficulty with this method.

Mr. McDonald then went on to remark that the size of coal had a great bearing on results obtained as had been shown elsewhere. He admitted that in this test, coal was used as a fine powder, and by standardizing the test, it was possible to put the actual coal into its proper place. They would then know exactly where they were with regard to price, since results would show if one coal was worth more than another.

Mr. Tran had referred very largely to the visual examination of the coal. This was very important. In point of fact he believed in an examination of the ash. He had often noticed that if known quantities of coal from the same pit were to be ashed, it was a peculiar fact that different ashes were obtained, even though the coal was supposed to be coal from the same pit.

Regarding Mr. Campbell's question about the vertical retort, Mr. McDonald said that they had experimented with a vertical retort and had even had a special retort made for steaming, although he had not included this fact in his address. The difficulty with this was that with one particular coal—an American coal—the swelling was so great that the coke came out at the top of the retort. With a horizontal retort, however, there had been no trouble in this direction.

Wales and Monmouthshire Junior Gas Association

Visit to Tonypandy and Presidential Address of S. E. Brett

The opening meeting of the session took place on Saturday, Oct. 24, 1931. This was held at Tonypandy, and members were invited to inspect the water pumping station at Blaenclydach. This proved an interesting visit. The Meeting which followed was attended by the Chairman of the Gas Department—Councillor Edgar Morgan—who warmly welcomed the members at the outset. Mr. Octavius Thomas, Engineer and Manager to the Rhondda Gas Department, was also present, and gave a short address which was warmly appreciated.

Clydach Vale Water Supply.

Mr. Thomas said that the water supply of Clydach Vale was provided by the Cambrian Colliery. Originally the supply consisted of water from springs on the mountain above; but as the coal from the upper seams was worked out of the levels, subsidence took place and the water found its way through cracks in the mountain into the levels, the water became very hard and the Medical Officer of Health did not consider it a satisfactory supply.

The Council went to Parliament in 1920 and obtained power to construct a reservoir on Blaenclydach Mountain at a sufficient height that the water would gravitate to the highest houses in the district, the number to be supplied being 1000. A steel tank was erected, 100 ft. in diameter and 20 ft. 6 in. deep, with a concrete roof, to contain one million gallons of water situated at 1100 ft. above ordnance datum.

As the general supply to the Valley is taken from a reservoir at Treherbert, which is situated at 780 ft. above ordnance datum, it was necessary to erect a pumping station.

The Council had already purchased a piece of land in Jones Street, Blaenclydach, and erected a small plant for the purpose of supplying houses in their existing area of supply, and there was sufficient land for the additional pumping station; this is situated at 680 ft. above ordnance datum so that pumps were required capable of delivering water to a height of 440 ft. As the pumping would only be intermittent it was decided to provide gas engines for driving the pumps as being the most economical.

A contract was let to erect a duplicate set of gas engines of 90 brake horse power, with three-throw horizontal pumps capable of delivering 21,000 gallons of water per hour. An arrangement is made by means of shafting that either gas engine will work either pump so that every precaution has been taken to ensure a constant supply.

In the construction of the reservoir on Blaenclydach Mountain, for the foundations, roof and steel work, no less than 2000 tons of material had to be carted up on a temporarily made road.

The length of mains which had to be made to supply the district was over four miles of pipes, varying in size from 9 in. to 3 in. in diameter. The cost of the whole work amounted to £28,000.

The Chair was occupied by Mr. G. H. Collins, the retiring President, who afterwards inducted the President-Elect (Mr. S. E. Brett) into the Chair. Mr. Collins' service to the Association was spread over a number of years, and he had filled the office of President with dignity and with the full confidence of the members. The usual Presidential Certificate was presented to him by Mr. Brett who complimented Mr. Collins on his successful year of office.

PRESIDENTIAL ADDRESS

of Mr. S. E. Brett, of Rhondda.

It is my purpose to give you some information as to the manner in which we meet and overcome the serious efforts of our competitors to put us out of business.

We have two methods of giving a supply to our consumers, the ordinary and the prepayment. The first needs no comment as it is common to all gas undertakings, but with the second one or the prepayment system we deal as follows: We lay the gas pipes and fit up the house with three or four fittings, as may be required, free; these fittings are of the very latest type, inverted of course, and should it be required we provide a bracket with tube connections for the use of a boiling ring. As time goes on, the older type of fittings are being replaced with the newer ones. The only charge made on the consumer is for burners, boiling ring, and metallic tubing for the boiling rings.

The Rhondda area is severely hit by the depression in the coal trade; consequently there are many miners unemployed here. When the miner is at work, one of his privileges is to have his house coal at a cheap rate. When he is not employed he pays the full price charged in the district. This factor has resulted in a heavy demand for a cheaper form of heat for cooking and other purposes. The people have turned to gas for this, the demand being for gas rings and cookers.

We have a very good sale of gas rings and cookers, although our principal method of dealing with cookers is to hire them out; we have a variety of these with a rental ranging from 7s. to 15s. per annum.

Gas Fires.

We have also made rapid strides in the sale of gas fires. One of the most effective advertisements for gas heating is a perfectly fitted gas fire. Its cheerful appearance and its effectiveness create in most people a desire to be possessed of similar means of comfort in their own homes. A modern gas fire is a fine creator of business; it gives entire satisfaction. But a lot depends on the way in which the fires are fixed. An unskilfully fitted fire does our Industry harm and renders void much good effort and propaganda. If the gasfitter bears this in mind every time he installs a fire, he will realize the important part he takes in promoting the popularity of gas heating.

THE PRESIDENT,

S. E. Brett, of Rhondda.

Mr. Brett has served under Mr. Octavius Thomas, of Rhondda, for a considerable number of years. He is in charge of the Pumping Station at Blaenclydach, and is also responsible for all repair work, including the sales organization on the district. He has been connected with the Wales and Monmouthshire Junior Gas Association since its inception, and has served on the Council for a number of years

Since the advent of electricity many places of worship in the district have adopted it in preference to gas lighting, and they found they were not so comfortable as before. There was a loss of heat, and we soon had many inquiries for gas radiators for heating; then again we have had other cases where churches and chapels, formerly heated by hot water apparatus, are now heated by radiators. During severe frosts the hot water supplies are liable to burst, and after going into the question of the cost of repairs and maintenance and the cost of installing and maintaining gas

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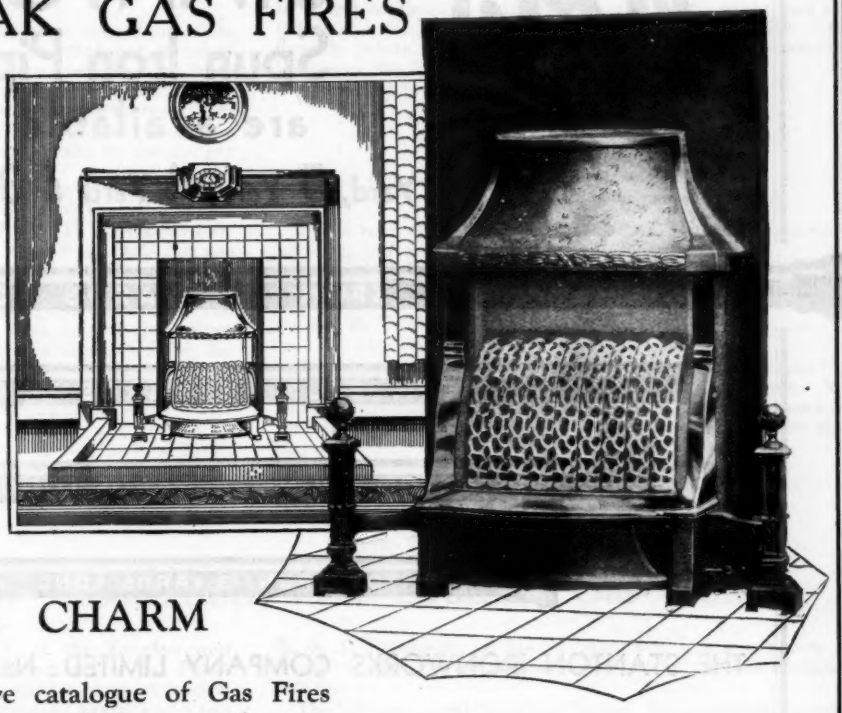

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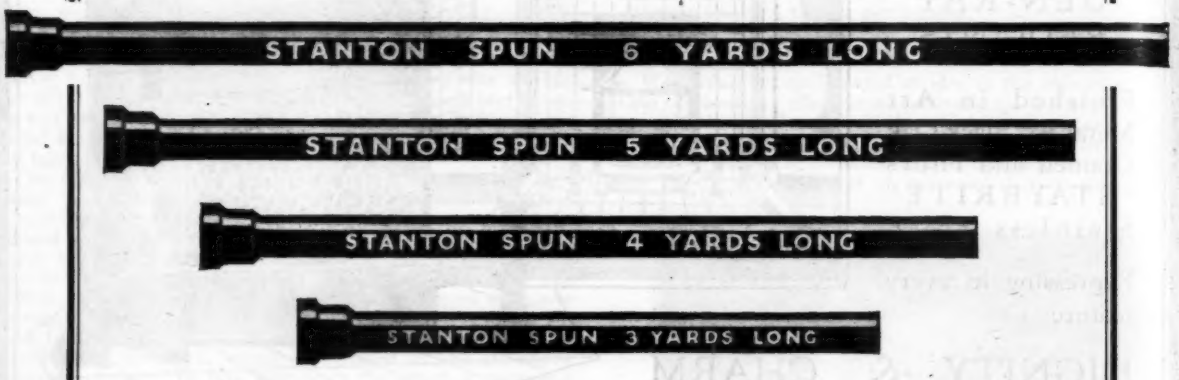

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radiators, those who had experienced bursts decided to adopt the radiators. And I think this speaks well for gas.

Fractured Mains.

I should like to say a few words regarding fractured gas and water mains. This district is, as you are aware, a mining one, with its consequent troubles arising from subsidence. The cost of repairs and maintenance of gas mains, services, and water mains is heavy.

Here are a few instances of what we have to contend with. We had a 10-in. cast-iron gas syphon or catch-pot smashed into several pieces owing to subsidence and pressure from the mountain. The main was under a reinforced concrete roadway. The leaking gas passed into surface water drains and business premises near by. We had an anxious time while excavating through the concrete owing to the danger of sparks flying off.

Here is another case. We had a leakage on an 8-in. cast-iron gas main. On opening out, we found that the spigot end was drawn out of the socket 3½ in. This entailed cutting out and re-laying. And again, on a 5-in. cast-iron gas main two spigot ends penetrated each other to the extent of 2 in. This main had been repaired some years previously, and a 5-in. double collar, 9 in. in length, had been used. In breaking this collar, it was found that one of the spigot ends had split 2½ in., and no doubt this accounted for the penetration of the spigot end.

Bridges frequently give us trouble. An 80 ft. span bridge, 40 ft. in width, was opened for traffic in April, 1922. Suspended on hangers beneath this bridge and in a way that repairs can be carried out easily, we have a 15-in. solid drawn steel gas main and a 10-in. cast-iron water main. Owing to movements the water main has had to be cut out and re-laid three times. The first time we used a 10-in. double collar, 16 in. in length, and allowed 6 in. between each spigot end. The second time we used the same collar and allowed 6 in. as before, but we also fixed expansion joint bushes with gun metal and with a draw of 4¼ in. And on the third time we did away with a length of cast-iron and replaced it with two lengths, 18 ft. each, and two lengths, 2 ft. each, of solid drawn steel tube with three flexible joints. We also re-set the gun metal expansion joint and the double collar.

Below are some of our recent breakages:

July 2	3-in. gas main at Williamstown
,, 7	6-in. gas main at Tonypandy
,, 9	3-in. water main at Trealaw
,, 13	3-in. gas main at Trealaw
,, 14	4-in. water main at Llwynypia

These are only a few cases in the Mid-Rhondda area which is but a small section of the Rhondda Valleys.

Mr. Thane (Vice-President) proposed a hearty vote of thanks to Mr. Brett for his address, and this was seconded by Mr. R. T. Mills.

Later at the Pandy Hotel, members were entertained at tea by the kind invitation of Mr. Octavius Thomas. Mr. Felton expressed appreciation on behalf of those present, and thanks for the services rendered by Mr. Thomas that day.

London Junior Association Visit Southall Gas-Works

On Saturday, Nov. 7, a party of the London and Southern District Junior Gas Association, under the Presidency of Mr. J. Howard Goldsmith, paid a visit of inspection to the Southall Gas-Works of the Gas Light and Coke Company.

These works have been described in the "Journal" as recently as June this year, but a few notes on some of the most interesting plant to be seen there may be given again.

The carbonizing plant is as follows:

(*a*) Woodall-Duckham intermittent vertical chambers consisting of two parallel benches, each containing eight settings of six chambers, 96 chambers in all. The chambers are constructed of Oughtibridge silica, and have a carbonizing capacity of 640 tons per day.

(*b*) Horizontals, consisting of 12 beds of ten retorts, each 22 in. by 16 in. by 22 ft. The retorts are segmental of 95 p.ct. silica, and are operated by Drakes' charging and discharging machine, having a carbonizing capacity of 185 tons.

(*c*) Inclines, consisting of 25 settings of eight retorts, 24½ in. by 14 in. by 20 ft. The retorts are segmental built of 95 p.ct. silica, having a carbonizing capacity of 205 tons per day.

(*d*) Woodall-Duckham continuous verticals, consisting of four settings of four vertical retorts of 95 p.ct. silica, with section 4 ft. 9⅜ in. by 10 in., tapering to 18 in., and 25 ft. long, and a carbonizing capacity of 85 tons per day. All the retort houses are equipped with waste-heat recovery boilers.

The coal-handling plant, supplied by Messrs. Fraser & Chalmers, of Erith, includes Marshall wagon tippler, skip hoist, coal breakers and screens, band elevator and shuttle band conveyor, and saverman drag line scraper. The coke-handling plant attached to the intermittent vertical chamber house attracted the interest of members.

The transformer house contains the equipment for stepping-up the voltage to 48,000, and is placed at the rear of the oil gas plant. Two electrostatic tar precipitator chambers are installed, one for oil gas, of 7 million c.ft. per day capacity, and one for coal gas of 5 million c.ft. capacity. Provision is made for a second treater. Two Whessoe washers, each of 7 million c.ft. per day capacity, are installed for extraction of benzole and naphthalene.

There is a Dri-Gas plant, supplied by W. C. Holmes, which has a capacity of 25 million c.ft. per day, and includes two rotary brush scrubbers, with liquor coolers and evaporators.

Waterless Holder.

The visitors were taken up the new waterless gasholder, from which a wonderful view of the surrounding country could be obtained. The holder was constructed by Messrs. R. & J. Dempster, of Manchester, and has a capacity of 8 million c.ft.; the height overall is 304 ft. and the diameter 203 ft.

The oil gas plant building houses five gas-making sets, four being of 1 million c.ft. per day capacity, and one of 2 million c.ft. per day capacity; the large set is fitted with a waste-heat boiler evaporating 3700 lbs. of water per hour. All the sets are hand-operated.

At the conclusion of the inspection of the works, the visitors were entertained at tea at the invitation of the Governor and Directors of the Gas Light and Coke Company—Mr. J. S. Thorman, the Southall Station Engineer, presiding.

Mr. Thorman extended a hearty welcome to the Association on behalf of the Governor and Directors of the Company and the staff at Southall, and expressed the hope that they had all had the opportunity of seeing some of the special features of the works—the waterless holder, the booster house, coal handling plant, electrostatic de-tarrer, and the new intermittent vertical retorts, which latter were dealing with 650 tons of coal a day, and making 10 million c.ft. of gas at 81 therms per ton. This had been a very successful plant, said Mr. Thorman; it had been at work now for twelve months but looked as good as new.

The President (Mr. Goldsmith) thanked Mr. Thorman and the Gas Light and Coke Company for the invitation to visit the works. He remarked that he did not remember having seen so many interesting things in one afternoon as at the Southall Gas-Works, and he was very grateful for the privilege of inspecting them.

Mr. H. C. Sims (Junior Vice-President), in proposing a vote of thanks to Mr. Thorman and the Governor and Directors of the Gas Light and Coke Company for the enjoyable visit, thought Mr. Thorman was to be congratulated on the excellent plant they had seen at his works. He also thanked the guides for the painstaking way in which they had shown the visitors round.

Mr. A. Tennant (Senior Vice-President) seconded the vote of thanks, saying that the Association were very grateful to the Gas Light and Coke Company for their hospitality. The hospitality of the Company was proverbial. Every opportunity was given them to see any new developments which took place. One of the primary objects of the Association was to learn of all the new developments in the various branches of their business. He would like to emphasize what Mr. Sims had said in reference to the guides. This was a Saturday afternoon when most of them sought some form of recreation, and it was very good of them to give up their afternoon.

The vote of thanks was carried with enthusiasm, and Mr. Thorman replied on behalf of the staff for the kind remarks in regard to the guides. He was sure they enjoyed showing the visitors round as much as the Association had enjoyed the visit. It would give him great pleasure, he concluded, to convey their thanks to the Governor and Directors, who always encouraged these visits and were ready to throw open any of their works for the good of the Industry.

Progress of Pipe Joint Research

By K. R. KNAPP, Chief Engineer, American Gas Association Testing Laboratory, Cleveland, Ohio

[A Contribution to the Distribution Conference of the American Gas Association, April, 1931]

(*Concluded from p.* 318.)

Particular emphasis should be laid on the fact that the extent of vibration produced in the test just described was far in excess of what joints would be called upon to meet in practice. In order to obtain a relation between the intensities used here and those recorded on the street, the telemeter was applied to a few of these joints and the vibrator operated at low air pressure. This precaution was taken as it was felt that the use of higher air pressures would cause an intensity high enough to damage the instrument permanently. With a pressure of about 10 lbs. of air on the vibrator, the instrument recorded approximately the same intensity as had been encountered at the most extreme conditions where it had been installed in the field. It was not thought advisable to attempt the use of any higher air pressure as this seemed about the limit of proper operation. Mention is made of this point to show the severity of the tests made in the Laboratory in comparison with those likely to occur in normal service.

The last field observations made were not concluded until after the beginning of the winter season, and it was recognized that it would not be practicable to attempt further work until spring. It was thought that while the information that had been secured showed that a certain amount of vibration of mains existed and that an indication of its intensity could be obtained, it would be a rather extended and costly procedure to accumulate much data on any extended scale. In the light of what had already been discovered and considering that no immediate work could be done in the field, it seemed logical to secure further information on the experiences which some of the larger companies had encountered on this question and to attempt to form an idea as to what lengths we would be warranted in carrying this particular investigation.

With this thought in mind a questionnaire on the subject was addressed to some 25 distribution engineers representing the larger gas companies of the United States and Canada. The replies showed that on some points at least there was a rather general agreement, while on others the opinions were quite varied.

MOST LEAKAGES DUE TO STREET CARS.

There was general agreement that locations existed in the different cities covered where vibrations of underground structures were believed to be excessive. However, opinion was not so decided that leakage was greater than usual at such locations, although the majority so considered it. Replies to the question asking whether unusual leakage had occurred on streets carrying heavy motor traffic, street car tracks, or elevated and subway lines showed that such leakage in a large majority of cases took place on car track streets. Several stated that this was especially true near car track intersections. A small majority also reported trouble on streets carrying heavy motor traffic. Only a few cities reported in regard to trouble from leakage on streets with subway or elevated lines. Little difficulty seemed to be due to this source. It was generally agreed that the leakage encountered under such conditions was usually on lead joints. This no doubt might logically be expected in view of the large number of such joints in service, especially in the older portions of larger cities.

Opinion was about equally divided as to the amount of trouble from leakage of mains under railroad grade crossings. In this connection, a large majority reported local railroad requirements of a clearance of 4 ft. or more from the base of the rail to the main. There was also no definite conclusion to be drawn as to the influence of the different kinds and conditions of paving, including the depth of the paving base, upon leakage of joints. A few opinions were expressed to the effect that a heavy paving base seemed to prevent leakage to some extent.

A substantial majority were of the opinion that less trouble from leakage was experienced from mains laid with plenty of cover than from those nearer the surface. Cases were cited where mains which had been laid with a greater than normal cover had proved unusually free from leaks.

It must be remembered in attempting to make any definite statements upon the extent and effects of vibration that this is only one of a number of factors affecting underground conditions. One of these alone may not possess any great amount of significance, but when they are taken collectively their effect may be considerable. It is difficult in practice to isolate one of these causes and determine definitely that it alone is responsible for some particular trouble which may develop. It often happens that certain causes may be blamed when definite results arise that are likely to be due more to a combination of circumstances rather than to any particular one.

The importance that should be attached to vibration as a cause of leakage may be well summed up by some observations made by the engineer of one of the largest cities in the country. He states in effect that vibrations set up by traffic cause little, if any, disturbance to an underground main system. The effect of vibration is so involved with other factors causing disturbance to mains that the damage which is directly due to vibration is lost and cannot be recognized. This is particularly true in a metropolitan area where practically all streets carry their full amount of surface traffic. It is considered that the intensity of vibration is most severe in streets where trucks, surface cars, or elevated railways are in operation, and it appears that in such streets joint leakage has not been proportionately greater than in streets where only one method of transportation is in use.

It does not seem possible to assign any definite answer to the question of the part played by vibration upon the leakage of cast-iron joints other than to say that such vibration may be a contributing factor and in combination with other causes may be responsible for a certain amount of the leakage encountered. As a single cause, however, it is not thought that undue importance should be attached to it.

FUTURE ACTIVITIES.

There are a few observations that might be made in closing. In regard to the work to be carried on in the near future, it is planned to continue the work on the application of rubber repair rings to old joints during the balance of the year and thoroughly to cover all applications of this type of repair. The possibility is recognized that some modifications in design may be made that will permit securing satisfactory results from this method of repair, and the importance of the subject is such that every encouragement should be given to the development of suitable repair methods of this kind. It is also planned to conduct some further tests on the use of rubber rings in new joints prepared in various ways, as these have shown by far the greatest amount of promise of any of the bell and spigot types of joints tested so far.

Considerable stress will be laid in this phase of the problem on the results secured with large pipes. It is our intention to continue further work on leak clamps, including some types which have not as yet been submitted, to secure full information on this subject. In this connection, some joints will be made up in different ways, and, after clamping, a series of tension and compression tests will be conducted, the same as in the case of new joints. This will determine definitely whether such movements as may be caused by temperature changes will be effectually withstood by the use of leak clamps. It is anticipated that within the next six months our programme will have advanced to a consideration of the testing of different welded joint combinations. This will mark the beginning of a new line of activities.

Trade Notes.

Joseph Taylor Saturator Orders.

Messrs. Joseph Taylor (Saturators), Ltd., of Bolton, announce that they have received two further orders for saturators—one for the Bishop Auckland District Gas Company and one for the Calverly and Horsforth District Gas Company.

NOTES ON PLANT AND PROCESSES

A Useful Booklet.

"How to Employ the Gas Unit" is the title of a booklet just published by Messrs. Radiation Limited, which should prove of service to members of the sales organizations of gas undertakings. The "unit" is that of 4000 B.Th.U., and the booklet has been prepared with the object of indicating an easy means of explaining to consumers the running costs of domestic appliances. Gas fires, cookers, and water heaters are dealt with, and the use of the booklet should facilitate the comparison between the cost of gas and that of other heating agents. Comparative data of the costs of gas and of electricity are given.

Gas Burners for Industrial Purposes.

A catalogue recently published by the Selas Gas and Engineering Company, Ltd., of Manchester, describes in detail the firm's "Lava" gas tips and burners for industrial heating, and also miscellaneous pilot and other tips for lighting and heating purposes.

Among the claims put forward for the "Lava" tip are that it will not corrode, oxidize, soot, or otherwise become clogged; it retains its shape at all temperatures up to 2000° Fahr.; and, in fact, is practically everlasting, barring accidents. The chemical constituents of the "Lava" material are set out, and it is stated that it fuses with difficulty under a strong blast flame; it is only slowly attacked by hydrochloric acid and is not affected at all by other acids or by alkalies. It neither swells nor shrinks with changes in atmospheric moisture, and, its coefficient of expansion with temperature being negligibly small, it is of special value in applications requiring a fixed relation of parts under all conditions.

The catalogue goes on to give illustrations and specifications of typical examples of the use of burners in industrial applications, together with engineering data in relation to gas-air ratios. Finally, a large range of illustrations, though not stock or standard items, indicate a few of the many thousand styles of radiant burner heads, carbon black tips, burner tips, pilot tips, spuds and caps produced and now being produced from the firm's material.

Faithful execution of the designs furnished by the customer eliminates stock items, but this should not deter a prospective "Lava" user. The flexibility of the firm's production machinery will ensure prompt handling of any new design.

Parliamentary Intelligence

[From Our Special Correspondents.]

House of Lords.

Special Orders.

The following Special Orders have been laid on the Table of the House and referred to the Special Orders Committee: Berkhampstead Gas Company; Gloucester Gaslight Company (two Orders); Cannock, Hednesford, and District Gas Company, Ltd.; Rhyl Urban District Council; Skegness Urban District Council; Wantage Urban District Council; Newquay (Cornwall) Gas Company, Ltd.; Hornsey Gas Company; and Luton Gas Company.

House of Commons.

Provisional Order Bill.

The Secretary for Scotland has presented a Bill to confirm a Provisional Order under the Burgh Police (Scotland) Act, 1892, relating to Kilmarnock Gas. The Bill is to be heard by the Examiners of Private Bills on Nov. 17.

Special Orders.

The following Special Orders have been presented and ordered to lie upon the Table of the House: Berkhampstead Gas Company; Cannock, Hednesford, and District Gas Company, Ltd.; Gloucester Gaslight Company (two Orders); Hornsey Gas Company; Luton Gas Company; Newquay (Cornwall) Gas Company; Rhyl Urban District Council; Skegness Urban District Council; Wantage Urban District Council; Gosport District Gas Company.

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Quotations submitted.

GAS MARKETS & MANUFACTURES

Stock Market Report.

[For Stock and Share List, see later page.]

The volume of business on the Stock Exchange last week showed some falling off compared with the few preceding weeks, and this was attributable to several factors, all of which, however, were of a purely temporary nature. The most important of these was the announcement that as from Monday, Nov. 16, the cash dealing rule, which came into force on the London Stock Exchange on Sept. 26, would be withdrawn; and as this date coincided with the opening of a new account, it was sufficient justification for many buyers to hold up business until then in order to take advantage of the fortnight's run. Among other factors were the three important ceremonial events occurring during the week, all of which played a part in the curtailment of business. Notwithstanding these digressions, prices in most markets remained fairly steady, while several Shipping securities showed considerable improvement.

There was less stock than usual available in the Gas Market, and even among some of the larger issues comparatively few, if any, transactions were recorded. Prices as usual remained firm, and quotations for the most part continued unaltered. There were a few changes however, and among these East Hull 5 p.ct. maximum stock rose 2 points to 71-76. This stock is closely held and very rarely comes into the market—the last recorded transactions on the London Exchange were in August last at 72 and 72½. The yield at the current price—viz., £6 16s. p.ct.—is a high one for the security offered, and some further appreciation in value appears justified. At the Liverpool Exchange, Chester 5 p.ct. rose 1 point to 88½, business being done at 90. Liverpool 5 p.ct. established a further advance to 96½, while at the local Exchange Newcastle £1 units gained another 3d. to 16s. 3d. The latter Company's 4 p.ct. preference stock dropped 3¾ points to 66¼, and at this price yields a little over 6 p.ct. South Metropolitan 5 p.ct. debenture rose 2 points to 99½, but there appears to be no justification for the reduction of 2 points to 94½ in the Cambridge Company's 5 p.ct. debenture; the last recorded transaction was on July 24 last at 101½.

Current Sales of Gas Products.

The London Market for Tar and Tar Products.

LONDON, *Nov.* 16.

Tar products continue firm. Current values are as under:

Pitch is from 65s. to 70s. per ton f.o.b.

Creosote, for export, varies from 3¾d. to 5d. per gallon f.o.b., according to specification.

Pure toluole is firm at about 2s. 3d. per gallon; benzole is 1s. 8d. to 1s. 9d. per gallon; 95/160 solvent naphtha, about 1s. 5d. to 1s. 6d. per gallon; and pyridine bases, 3s. 6d. to 3s. 9d. per gallon.

Tar Products in the Provinces.

Nov. 16.

The average prices of gas-works products during the week were: Gas-works tar, 22s. to 26s. Pitch—East Coast, 55s. to 56s. f.o.b. West Coast—Manchester, Liverpool, Clyde, 55s. to 56s. f.o.b.* Toluole, naked, North, 1s. 8d. to 1s. 8½d. Coal-tar crude naphtha, in bulk, North, 5d. to 5¼d. Solvent naphtha, naked, North, 1s. 3d. to 1s. 3½d. Heavy naphtha, North, 11d. to 11½d. Creosote, *ex* works, in bulk, North, liquid and salty, 3½d. to 3¾d.; low gravity, 1¼d.; Scotland, 3¼d. to 3½d. Heavy oils, in bulk, North, 5d. to 5¼d. Carbolic acid, 60's, 1s. 6½d. to 1s. 7d. Naphthalene, £9 to £10. Salts, 50s. to 70s., bags included. Anthracene, "A" quality, 2½d. per minimum 40 p.ct., purely nominal; "B" quality, unsaleable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *Nov.* 14.

Trading is confined to comparatively small parcels, there being a reluctance on the part of distillers to sell for forward delivery under present conditions.

Coal tar pitch.—Export price is nominal at round 60s. per ton f.o.b. Glasgow. The home demand is steady, and 57s. 6d. to 60s. per ton *ex* makers' works is being obtained.

Refined tar to Ministry of Transport Specification shows a further increase in value to 3¾d. to 4d. per gallon naked at makers' works.

Creosote oil.—Market is steady with supplies of the best grades somewhat scarce. B.E.S.A. Specification is 2¾d. to 3d. per gallon; low gravity, 3¼d. to 3½d. per gallon; and neutral oil, 3½d. to 3¾d. per gallon—all in bulk quantities *ex* works.

Cresylic acid.—No change can be recorded. Pale, 97/99 p.ct., 1s. 3d. to 1s. 4d. per gallon; dark, 97/99 p.ct., 1s. 2d. to 1s. 3d. per gallon; and pale, 90/100 p.ct., 1s. 3d. to 1s. 6d. per gallon—all f.o.r. works naked.

Crude naphtha.—Available supplies are selling at 4½d. to 5d. per gallon f.o.r. in bulk.

Solvent naphtha.—Market is dull. 90/160 is 1s. 3d. to 1s. 4d. per gallon, and 90/190, 1s. to 1s. 1d. per gallon.

Motor benzole.—Quotations are steady at 1s. 3d. to 1s. 4d. per gallon f.o.r. in buyers' tanks.

Pyridines.—90/160 grade is 3s. to 3s. 3d. per gallon, and 90/140 grade 3s. 3d. to 3s. 6d. per gallon.

Benzole Prices.

These are considered to be the market prices for benzole at the present time:

	s.	d.		s.	d.	
Crude benzole	0	7	to	0	7½	per gallon at works
Motor ,,	1	2	,,	1	3	,, ,, ,,
Pure ,,	1	6	,,	1	7	,, ,, ,,

Contracts Advertised To-Day.

Tar Extractor.

The Clacton Urban District Council Gas Department invite tenders for a P. & A. tar extractor. [Advert. on p. 502.]

Washer-Scrubber.

The Clacton Urban District Council Gas Department invite tenders for a rotary type washer-scrubber. [Advert. on p. 502.]

New Capital Issues.

Dudley and Brierley Hill Stock Issue.—The list for the issue of 5 p.ct. redeemable debenture stock of the Dudley, Brierley Hill and District Gas Company was closed on Nov. 12, the issue being fully subscribed. This issue was advertised in the "JOURNAL" of Nov. 4.

Gas Undertakings' Results.

HEREFORD.

The annual report of the Hereford gas undertaking prepared by Mr. A. Roberts (Engineer and General Manager) states that during the past year 223 new consumers were connected. There was also a large increase in the number of apparatus on hire which clearly demonstrated the value of gas as a fuel. On the expenditure side of the profit and loss account there was a total increase of £1220. In the case of coal the cost per ton was greater than in the previous year, but as a set off the income from residuals had been very much decreased. On the income side there was a total increase of £706, and the year's working had resulted in a gross profit of £8464. After deducting the sums required for interest, &c., there was an adverse balance of £730 to be deducted from the revenue account, making a total balance at the end of the year of £7813, as compared with £858 a year ago.

LOUTH.

The Annual Meeting of the Louth Gas Company was held on Nov. 7, when the Directors reported that the balance to the credit of the profit and loss account was £6288. Out of this they recommended dividends as follows: Original stock, 16 p.ct.; improvement stock "A," 5 p.ct.; improvement stock "B," 5 p.ct.; new ordinary stock, 13 p.ct. This left a balance of £456 which it was proposed to carry forward. The recommendations were approved.

STOCKPORT.

The total expenditure on revenue account during the year amounts to £184,893, against £190,660 for 1929-30, while income has been £234,041, against £233,421, producing a trading profit of £49,148, against £42,760. The net profit is £15,369. A total of 60,200 tons of coal have been carbonized during the year and the quantity of gas made has been 1,150,137,000 c.ft. (5,175,616 therms), an average make per ton of coal carbonized of 18,415 c.ft. (82·8 therms) per ton. It is very satisfactory to report an increased sale of 8½ million c.ft. of gas over last year, making the total sold 1,042,504,600 c.ft. (4,691,270 therms) against 1,034,068,900 c.ft. (4,653,310 therms) in 1929-30, resulting in an increased revenue of £1298.

STOCK AND SHARE LIST.

[For Stock Market Report, see earlier pages.]

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf. Yr.	Dividends. Last Hf. Yr.	NAME.	Quotations. Nov. 14. (Provincial Exchanges Nov. 13.)	Rise or Fall on Week.	Transactions. Lowest and Highest Prices During the Week.
£			% p.a.	% p.a.				
1,551,868	Stk.	Oct. 5	7⅜	7⅜	Alliance & Dublin Ord. ...	100—105	...	103½—104⅞
374,000	,,	July 9	4	4	Do. 4 p.c. Deb. ...	67—72	...	...
522,655	,,	Aug. 24	7	7	Barnet Ord. 7 p.c.	121—126	...	...
200,000	1	Oct. 19	1/9⅔	1/4⅓	Bombay, Ltd.	15/—17/6	...	...
174,500	10	Aug. 10	9	9	Bournemouth 5 p.c. ...	14⅜—15⅜	...	...
500,050	10	,,	7	7	Do. B 7 p.c. ...	12—13	...	...
439,160	10	,,	6	6	Do. Pref. 6 p.c. ...	10½—11½	...	11⅛
50,000	Stk.	June 25	3	3	Do. 3 p.c. Deb. ...	55—60	...	...
162,025	,,	,,	4	4	Do. 4 p.c. Deb. ...	75—80	...	...
357,900	,,	Aug. 24	7½	7½	Brighton & Hove 6 p.c. Con.	114—119	...	114½—117
371,880	,,	,,	6⅔	6⅔	Do. 5 p.c. Con.	104—107	...	105
1,287,500	,,	July 23	5	5	Bristol 5 p.c. max.	90—93[a]	...	...
120,420	,,	June 25	4	4	Do. 1st 4 p.c. Deb. ...	78—80[a]	...	...
217,870	,,	,,	4	4	Do. 2nd 4 p.c. Deb. ...	78—80[a]	...	...
328,790	,,	,,	5	5	Do. 5 p.c. Deb.	98½—99¾[a]	...	...
855,000	,,	Oct. 5	8	7	British Ord.	108—113	...	110
100,000	,,	June 25	7	7	Do. 7 p.c. Pref.	110—115	...	...
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb. ...	70—75	...	75
450,000	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	92—97	...	...
160,000	,,	June 25	5	5	Cambridge 5 p.c. Deb. ...	92—97	−3	...
100,000	10	May 21	6	8	Cape Town, Ltd.	9—10	...	...
100,000	10	Oct. 30	4½	4½	Do. 4½ p.c. Pref. ...	6¼—7¼*	...	6¼
150,000	Stk.	June 25	4½	4½	Do. 4½ p.c. Deb. ...	65—70	...	...
626,860	,,	July 23	6	6	Cardiff Con. Ord.	95—98	...	...
237,860	,,	June 25	—	2½	Do. 5 p.c. Red. Deb.	90—95	...	...
157,150	,,	Aug. 10	6½	5	Chester 5 p.c. Ord.	86—91½	+1	...
98,936	1	Oct. 5	1/2-	2/-	Colombo, Ltd. Ord.... ...	27/—32/-	...	...
24,500	1	,,	1/4⅛	1/4⅛	Do. 7 p.c. Pref.	17/—19/-	...	...
609,204	1	Oct. 19	1/3·27	-/10·90	Colonial Gas Assn. Ltd. Ord.	7/6—12/6	...	...
296,053	1	,,	1/5·67	1/2·54	Do. 8 p.c. Pref.	10/—15/-	...	...
2,073,280	Stk.	July 23	6	6	Commercial Ord.	92—95	...	...
475,000	,,	June 11	3	3	Do. 3 p.c. Deb. ...	52—57	...	...
787,560	,,	Aug. 10	7	7	Croydon sliding scale ...	107—110	...	...
453,100	,,	,,	5	5	Do. max. div.	81—84	...	82½—83½
542,270	,,	Aug. 24	10	7	Derby Con.	120—125[c]	...	...
55,000	,,	June 25	4	4	Do. Deb.	65—70[c]	...	...
209,000	,,	Sept. 7	5	5	East Hull Ord. 5 p.c. ...	71—76	+2	...
1,002,180	,,	Sept. 21	16⅔	14	European, Ltd.	100—110	...	99½—106
18,953,033	,,	July 23	5⅞	5⅞	Gas Light & Coke 4 p.c. Ord.	18/9—19/9/	...	18/9—19/6
2,600,000	,,	,,	3¾	3¾	Do. 3¾ p.c. max.	55—60	...	58—59
4,294,691	,,	,,	4	4	Do. 4 p.c. Con. Pref. ...	74—79	...	74½—76
5,694,095	,,	June 11	3	3	Do. 3 p.c. Con. Deb. ...	56—61	...	59½—60½
3,642,770	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	98—102	...	99—101
2,500,000	,,	,,	—	4½	Do. 4½ p.c. Red. Deb. ...	89—94	...	91—92½
161,490	,,	Sept. 7	10	10	Harrogate Cons. 10 p.c. max.	157—162	...	...
82,500	,,	Aug. 24	7	7	Hastings & St. L. 5 p.c. Conv.	95—100	...	98—99½
358,740	,,	,,	5½	5½	Do. 5½ p.c. Conv.	80—85	...	...
70,000	10	9 Oct. '30	½	10	Hongkong & China, Ltd. ...	12½—13½	...	...
213,200	Stk.	Aug. 10	6	6	Hornsey Con. 3½ p.c. ...	89—92	...	...
2,800,000	,,	Oct. 30	25	15	Imperial Continental Cap.	340—360*	−5	340—351
223,190	,,	Aug. 10	3½	3½	Do. 3½ p.c. Red. Deb.	70—75	...	...
235,242	,,	Aug. 10	8½	8½	Lea Bridge 5 p.c. Ord. ...	129—132	...	129—129½
2,145,907	,,	Aug. 24	6	6	Liverpool 5 p.c. Ord. ...	95⅞—96⅜[b]	+⅜	...
306,083	,,	July 15	4	4	Do. 4 p.c. Deb. ...	79—81[b]	...	...
165,736	,,	Aug. 24	9	8	Maidstone 5 p.c. Cap. ...	123—128	...	...
63,480	,,	June 25	3	3	Do. 3 p.c. Deb. ...	55—60	...	...
75,000	5	June 11	110	110	Malta & Mediterranean ...	6⅞—7½	...	...
392,000	—	Oct. 1	5½	5½	Metropolitan (of Melbourne) 5½ p.c. Red. Deb.	78—83	...	...
171,978	Stk.	Aug. 24	5	5	M. S. D. Utility "C." Cons.	76—81	...	...
522,992	,,	,,	4	4	Do. 4 p.c. Cons. Pref.	67—72	...	...
675,000	,,	May 21	16	16	Montevideo, Ltd.	70—80	...	70—71
2,061,315	,,	Aug. 10	5⅔	5	Newcastle & Gateshead Con.	15/9—16/9[d]/	+/3	...
682,856	,,	,,	4	4	Do. 4 p.c. Pref. ...	65⅔—66⅔[d]	−3⅓	...
691,705	,,	June 25	3½	3½	Do. 3½ p.c. Deb. ...	69—71[d]	...	...
277,285	,,	Oct. 30	5	5	Do. 5 p.c. Red. Deb.	96—98[d]	...	...
199,940	,,	Aug. 24	7½	7½	North Middlesex 6 p.c. Con.	105—110	...	...
396,160	,,	Aug. 10	5	5	Northampton 5 p.c. max. ...	74—79	...	...
300,000	,,	Apl. 23	9	7	Oriental, Ltd.	93—103	...	...
69,000	5	13 May, '15	—	—	Ottoman	0—½	...	...
205,162	Stk.	June 25	8	8	Plym'th & Stonehouse 5 p.c.	110—115	...	...
424,416	,,	Aug. 24	8	8	Portsm'th Con.Stk. 4 p.c.Std.	119—124	...	...
241,446	,,	,,	5	5	Do. 5 p.c. max. ...	76—79	...	...
686,312	,,	July 23	4	4	Primitiva 4 p.c. Rd. Db. 1911	83—86	...	85
389,813	,,	June 25	4	4	Do. 4 p.c. Cons. Deb.	84—87	...	...
150,000	10	Sept. 21	6	6	San Paulo 6 p.c. Pref. ...	7½—8	...	...
1,736,968	Stk.	Sept. 7	6½	6	Sheffield Cons.	103—105[e]	...	...
96,000	,,	July 9	4	4	Do. 4 p.c. Deb.	79—81[e]	...	...
133,201	,,	Sept. 7	5	8⅓	Shrewsbury 5 p.c. Ord. ...	72—77	...	...
90,000	10	June 11	15	15	South African	3⅜—5⅜	...	...
6,709,895	Stk.	July 23	7½	5	South Met. Ord.	99—102	...	100—101
1,135,812	,,	,,	6	6	Do. 6 p.c. Irred. Pf.	102—107	...	104—106
1,895,445	,,	July 9	3	3	Do. 3 p.c. Deb. ...	56—61	...	...
1,000,000	,,	July 23	4	5	Do. 5 p.c. Red. Deb.	97—102	+2	100—100½
91,500	,,	Aug. 10	8½	8½	South Shields Con.	108—110[d]	...	...
1,543,795	,,	Aug. 10	6½	6½	South Suburban Ord. 5 p.c.	101—104	...	...
668,837	,,	June 25	5	5	Do. 5 p.c. Deb.	92—97	...	96
647,740	,,	Aug. 24	5	5	Southampt'n Ord. 5 p.c. max.	76—79	...	...
121,275	,,	June 25	4	4	Do. 4 p.c. Deb.	70—75	...	...
250,000	,,	Aug. 24	7	7	Swansea 7 p.c. Red. Pref. ...	95—98	...	...
200,000	,,	June 25	6½	6½	Do. 6½ p.c. Red. Deb.	99—102	...	...
1,076,490	,,	Aug. 10	6⅔	6⅔	Tottenham and District Ord.	103—107	...	106
150,000	,,	,,	5½	5½	Do. 5½ p.c. Pref. ...	93—98	...	...
199,005	,,	June 11	4	4	Do. 4 p.c. Deb. ...	70—75	...	73
85,701	,,	Sept. 21	6	6	Tuscan, Ltd., 6 p.c. Red. Db.	72—77	...	...
310,694	,,	Aug. 24	7	7	Uxbridge, Maidenhead, & Wycombe 5 p.c.	100—105	...	...
88,330	,,	,,	5	5	Do. 5 p.c. Pref. ...	88—93	...	...
1,322,220	,,	July 9	7	7	Wandsworth and District: Consolidated	111—114	...	111½—112½
971,373	,,	,,	5	5	Do. 5 p.c. Pref.	90—95	...	95
1,167,964	,,	June 25	5	5	Do. 5 p.c. Deb.	93—98	...	97

Quotations at:—*a.*—Bristol. *b.*—Liverpool. *c.*—Nottingham. *d.*—Newcastle. *e.*—Sheffield. *f.*—The quotation is per £1 of stock. * Ex. div. † Paid free of income-tax. ‡ For year. § Div. = 10 p.c. p.a. less tax and less tax on interim dividend.

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With one exception Peter is an ordinary little fellow. Chubby, likeable, just five-and-a-half, full of life and fun and on occasions—be it admitted—of naughtiness.

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Peter learns reading, writing, and 'rithmetic through the medium of "Braille"—dull stuff compared with the coloured picture books of most five-and-a-halfs. However, he's a stout lad is Peter, and he's making great progress.

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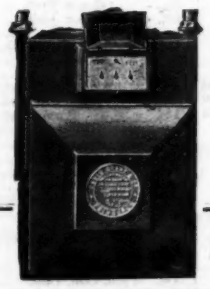

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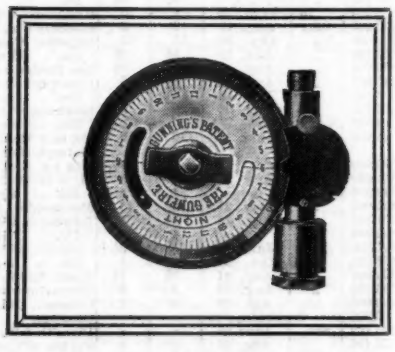

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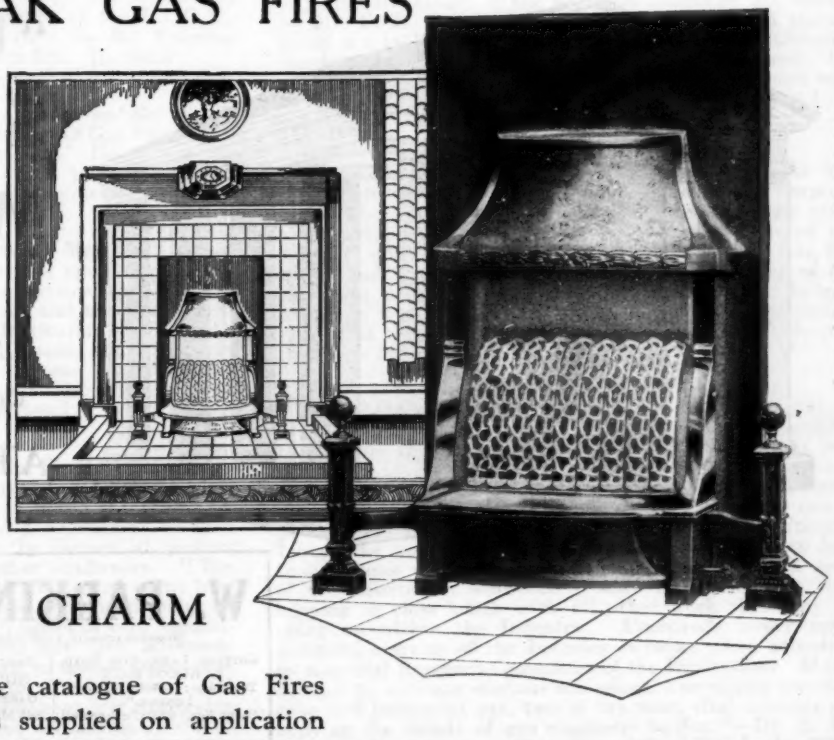

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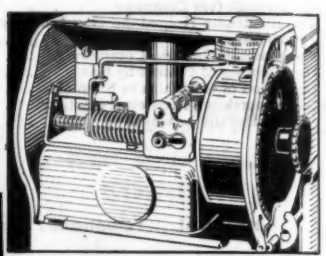

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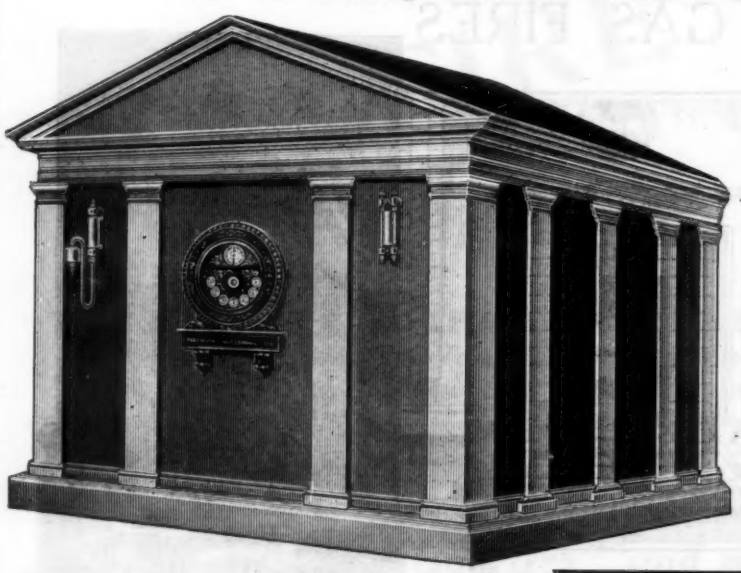

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